



## Pro-Poor Livestock Sector Development in Latin America: A Policy Overview

Ugo Pica-Ciamarra, Joachim Otte, Jeroen Dijkman

### Abstract

Since smallholders make up the large majority of the rural poor in Latin America, productivity gains and increased returns to their assets could contribute to widespread poverty alleviation. One such opportunity may be offered through diversification into high-value agricultural products, such as fruits, vegetables, meat or dairy products. This paper presents a case for investing public resources to support smallholder diversification and specialisation into high-value livestock products, reviews the current livestock policy framework in the region and proposes a number of institutional changes aimed at tapping into increasing the contribution of livestock sector development to socially desirable outcomes.

### I. Introduction

Rural poverty is widespread in Latin America and equitable rural development is thus key to achieving the Millennium Development Goals (MDGs) in the region. Though there is a plethora of strategies towards pro-poor rural development, in recent years, Latin American governments have increasingly supported the diversification and specialization of smallholders into high-value agricultural products, such as vegetables, fruits, meat and milk, as a promising pro-poor rural development strategy. The objective is to make smallholders tap into remunerative agricultural markets through satisfying food quality and safety standards, labelling products, establishing contracts with traders, processors, supermarkets and agro-exporters, and thereby get a foothold on a pathway out of poverty (Céspedes and Paz, 2005; FAO, 2004a). In spite of notable successes, the largest part of Latin American smallholders is still excluded from high-value

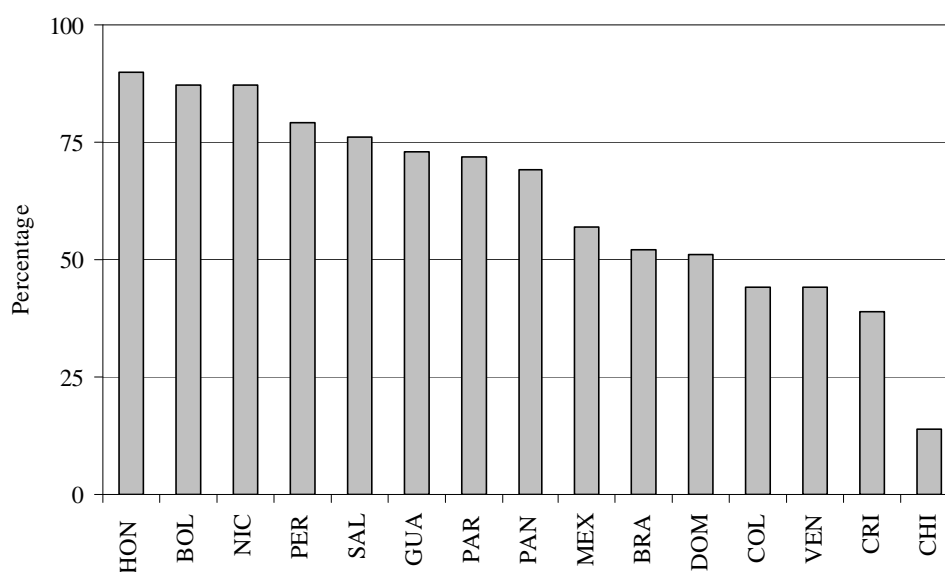
agricultural markets (USAID, 2005). The challenge for policy makers remains to design and implement policies that allow the majority of the rural poor to diversify towards and benefit from producing high-value agricultural products.

This paper argues that promoting smallholders' diversification and specialisation into high-value livestock products and by-products is an effective rural poverty reduction strategy in Latin America; it presents a bird's eye overview of livestock policies in the region, which have been traditionally considered as a technical appendage of agricultural sector policies; and proposes a number of institutional policies? not sure what you mean? You mean institutional change? to tap into the pro-poor opportunities offered by the livestock sector. The next section illustrates the pro-poor potential of livestock sector development in Latin America. Sections three and four review and comment on the recent trends in production and marketing policies affecting livestock smallholders. Section five summarises the main findings and draws some conclusions.

## **II. The Case for Smallholder Livestock Production**

The United Nations Economic Commission for Latin America and the Caribbean (ECLAC) calculates that there are 222 million poor people in the region, of which 96 million live in extreme poverty. The poverty rate is higher in rural (59%) than urban areas (34%), though differences are significant among countries (CEPAL, 2006). Equitable growth of rural areas should therefore be a priority for policy makers in all countries in the region, if the MDGs are to be achieved (Echeverria, 2000; de Ferranti *et al.*, 2005; Lewin, 2003).

There are several ways to promote the pro-poor development of rural areas. In Latin America, since the majority of smallholders and indigenous people depending on 'non-professional agriculture' are poor (CEPAL, 2006), public actions increasing the returns to and productivity of their scarce assets can certainly contribute to broad-based poverty alleviation.

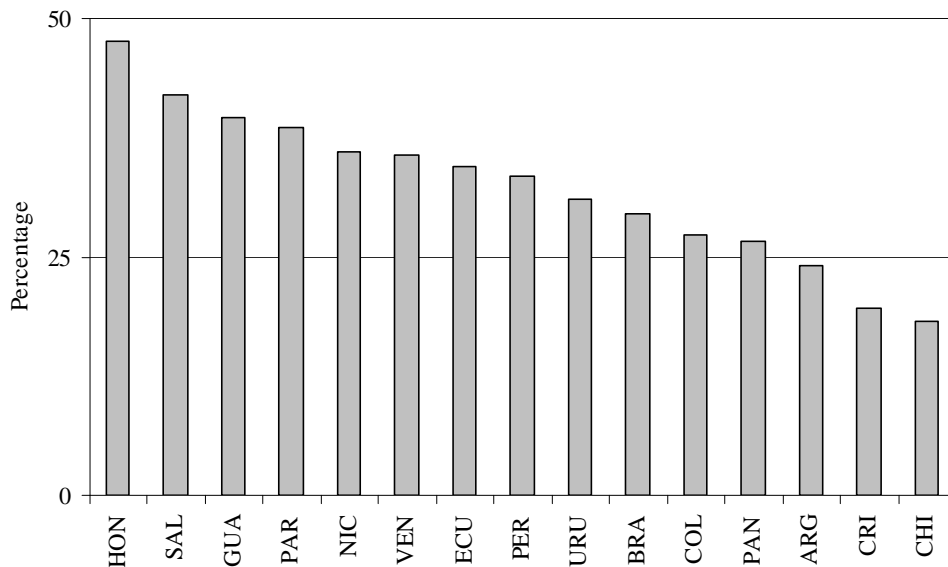
**Fig.1** Poverty rates among own-account workers in non-professional agriculture, 2004.

Source: CEPAL (2006)

Increasing the productivity and returns to traditional staples, however, is unlikely to lead to widespread poverty reduction, as real prices of grains have decreased by over 75 percent during the last 50 years and are expected to decrease further (FAO, 2004b; Mundlak, 1990). There is therefore growing consent that diversification into high-value agricultural products –either those having a high-return per unitary output/input or those going through successive value-adding transformations– might be an alternative and highly effective way to increase the returns to agricultural assets and facilitate smallholders escaping poverty (CGIAR, 2004; CIAT, 2005; FAO, 2004a). Furthermore, in Latin America there is abundance of thriving high-value product supply chains which have helped many smallholders to move out of poverty. Examples include coffee, broccoli and cauliflower production and swine raising in Mexico; llama fibre and parsley production in Bolivia; grape and codfish exports from Chile; tomato, lettuce, cabbage, cucumber, bell pepper, and spring onions production in Brazil; snow peas in Guatemala; and asparagus in Peru (Field *et al.*, 2005; Hernández Moreno, 2001; Key and Runsten, 1999; Paz and Gandarillas, 2005; Peña *et al.*, 2005; Smith *et al.*, 1995; World Bank, 2005a). Even though encouraging, these cases are still on a small-scale and policy makers should endeavour to scale them up so that the majority of the rural poor can diversify into and benefit from producing high-value agricultural products (USAID, 2005). At the regional level, a global effort towards supporting and scaling-up smallholder livestock production appears to be promising in terms of poverty alleviation for a number of reasons.

I Ranches have long been the dominant form of ruminant production in Latin America, and poultry, swine and dairy production are displaying? increasing concentration. The majority of rural dwellers in the region, however, are smallholder farmers living on non-professional agriculture and tending some livestock, which contribute to the income of the extremely poor too. Zezza *et al.* (2007) find that about 84 percent of the rural households own livestock in Ecuador, 70 percent in Guatemala and 55 in Nicaragua. According to IFAD (2002), the three largest groups of rural poor in Latin America –indigenous communities, small farmers, and subsistence and landless farmers– are dependent on livestock as part of their livelihoods. Calculations by the International Livestock Research Institute (ILRI) estimate that about 49 percent of the extremely poor in rural areas hold livestock in Central America, 12 percent in Mexico, 39 percent in the Andean countries, 29 percent in the Southern Cone? countries, and 30 percent in Brazil (Thornton *et al.*, 2002). Livestock production, therefore, is not an entirely new business for most rural dwellers, including the very poor, which is good as smallholders are typically risk averse and in most cases start a new business (e.g. fruit and vegetable production) only when receiving significant technical and financial assistance.

**Fig. 2** Poor households (% out of total poor) keeping livestock in rural areas, Latin America, 2000.



Source: Authors' calculations based on Thornton *et al.* (2002)

ii Livestock products are of high value given the complexity of their production chain, from animal raising, to processing, transporting and final consumption. In Chile, for example, in

2001, farm-gate and consumer prices differed by about a factor three [290 percent] for beef, porc and poultry, and by around a factor 2 [190 percent] for milk (FAO / ESCB, 2004).

- iii Production of high-value crops is often confined to specific agro-ecological zones and farmers in marginal areas, where the land is mostly suited to grow traditional staples, cannot make a permanent transition to them. On the other hand, livestock are raised throughout the continent – from semi-arid Northern Mexico, to the Andean highlands, the tropical coast of Colombia and the Argentinean pampas.
- iv High-value crops are often grown for export markets, which are extremely volatile both because of strict sanitary and phytosanitary barriers and high price variability due to the vulnerability of most fruits and vegetables to small weather variations (Davis, 2006; Hall, 2005; Weinberger and Lumpkin, 2007). Livestock production, with the notable exception of beef from Uruguay and Argentina and in part poultry from Brazil and swine from Mexico, largely targets local markets, and FAO estimates that in the region meat consumption will increase from 28 million metric tons in 1997/1999 to 58 million in 2030 (+107%), and milk consumption from 57 to 105 million metric tons (+52%) (FAO, 2003b).
- v Livestock production is labour intensive, especially dairy farming where labour can account up to 85 percent of total production costs (IFCN, 2004), and generates backward and forward linkages too: each small livestock producer is estimated to create a minimum of three rural jobs in Latin America, and about 17 percent of the region's total population, or 50 percent of the total economic active population, is directly or indirectly employed by the sector (Huss, 1996).

Improved use of existing livestock assets could therefore contribute to widespread poverty alleviation in rural Latin America. To this aim, policy makers should design and implement policies allowing smallholders to (i) produce and (ii) commercialize livestock products and by-products competitively. These two sets of policies are strictly interrelated but are below reviewed and commented separately as, whereas a wide literature exists on current production enhancing policies, marketing policies have not been extensively researched.

### III. Pro-Poor Shifts in Livestock Production Policies

Livestock policies have been traditionally designed by technical departments in isolation or with loose connections with the broader policy framework. Yet, the way livestock keepers combine their factor inputs for production and consumption purposes depends on the interplay between macroeconomic, institutional, and agricultural sector policies and, eventually, on livestock sub-

sector policies. Smallholders, for instance, may refuse to adopt livestock production-enhancing technology if they lack access to profitable markets; or to cash-in their livestock when prices are good if they lack access to micro-saving institutions.

Good macroeconomic and institutional policies are a pre-condition for efficient livestock production. Hyperinflation and corruption, for example, do not support an efficient allocation of factor inputs in any productive sector, including livestock. Since the 1980, and particularly after 1996, Latin America has been recording improvements in macroeconomic policies and institutional indicators (Singh, 2005; World Bank, 2007), but good macroeconomic and institutional fundamentals are not sufficient by themselves to help the small livestock holders to escape poverty. Imperfect, segmented and incomplete markets, in fact, prevent the rural poor from allocating their scarce resources efficiently, including livestock. For instance, while prices could be stable, the poor livestock keepers may be unable to access credit to produce meat and milk satisfying consumer quality standards; while private veterinarians may be efficient and professional, the resource poor might be unable to pay for their services. Governments in Latin America have been thus attempting to design and implement policies reducing market imperfections, thereby allowing smallholders, including the livestock dependent poor, to make efficient use of their farm animals. Loosely following Dorward *et al.* (2004), these policies are here reviewed according to three domains:

- i Policies 'protecting assets/reducing vulnerability', i.e. policies promoting smallholders' access to basic production inputs, such as land, feed/forage, water and risk-coping mechanisms. Uncertainty and market imperfections, in fact, prevent smallholder producers from having secure access to these inputs, which is a necessary condition for efficient resource allocation.
- ii Policies 'creating conditions for growth', i.e. policies allowing small livestock holders to access credit and subsidiary inputs, as well animal health services, to produce beyond survival level and make a profit out of their livestock assets.
- iii Policies 'sustaining growth', i.e. policies allowing smallholders to satisfy food safety and quality standards, continuously adjust to changing consumer preferences, and not be crowded out by large commercial producers.

**Table 1.** A framework to review pro-poor livestock production policies.

	<b>Policy objectives</b>	<b>Policy instruments</b>	<b>Rationale</b>
<b>The context for livestock policies</b>	Creating a conducive macro environment	Macroeconomic policies and institutional reforms	Sound macroeconomic fundamentals and high quality institutions are positively associated with economic and social indicators of well-being. Macro-micro linkages to the rural economy are e.g. mediated through the inflation rate, the real exchange rate, fiscal policies and ag non-ag terms of trade.
<b>Protecting assets / reducing vulnerability</b>	Protecting assets and securing access to basic production inputs	Securing access to land, feed and water  Land/water laws in crop-livestock systems and pastoral areas; forage / feed policies	Inadequate access to land /water and lack of feed and forage are main developmental constraints for poor livestock producers. The land market is rarely pro-poor as land prices exceed the present discounted value of income streams derived from farming because of the social/collateral value of land. Even with perfect credit markets only those with accumulated savings can acquire land at market price without curtailing their consumption stream.
		Providing insurance and risk coping mechanisms  (Public) ex-ante and / or ex-post risk-coping mechanisms for natural disasters, including animal killer diseases	Variability of returns prevents livestock holders from making efficient use of their resources and leads to overshooted livestock production cycles. Imperfect and asymmetric information and high transaction costs constrain insurance markets.
<b>Creating conditions for growth</b>	Increasing production and productivity	Securing access to livestock / animal health services  Public / private distribution/regulation of livestock / animal health services	Animal diseases negatively impact on livestock production; livestock holders are often poor, weakly educated and dispersed and unable to effectively demand public and private livestock services.
		Securing access to credit and other inputs  Government intervention / regulation to establish pro-poor financial and input markets	Livestock holders need credit to access production increasing inputs; imperfect and asymmetric information and high transaction costs ration their access to credit and other production inputs as private agents are rarely willing to serve them.
<b>Coping with growth / responding to changing markets</b>	Increasing quality and competitiveness of products	Promoting provision of public goods: research  Public regulation / funding of research centres; public management of public research centres	Private research centres are likely to invest in profitable breeds/technologies, and poor livestock holders rarely constitute an attractive market for the private sector.
		Promoting provision of public goods: food safety, quality, environment protection  Public regulation / management of food safety / quality control; environmental policies; animal welfare regulations	Some livestock-associated public goods are underprovided by the markets, because of their non-rivalry and non-excludability. These goods are necessary for poor livestock holders not to be crowded out by large competitors and for countries to compete in international markets.

## Policies Protecting Assets / Reducing Vulnerability

Policies ‘protecting assets/reducing vulnerability’ aim at providing poor livestock holders with adequate and secure access to basic production inputs, including (i) access to land, water and feed, and (ii) risk coping mechanisms for natural disasters and price shocks.

Governments in Latin American have long attempted to equalize the dual agrarian structure, comprising few large and countless small-fragmented farms, largely through state-led agrarian reforms. Results have been mostly unsatisfactory (de Janvry and Sadoulet, 1989), and since the last decade the policy focus has shifted towards market driven mechanisms of land reallocation. For instance, with the significant exception of Mexico and Peru, twelve countries have passed norms that 'privatize' indigenous communal rights (Griffiths, 2004), and Brazil and Colombia have been implementing market-driven land reforms (Deininger, 2001). While these policies have been dictated by both efficiency and equity motives, the overall evidence is that land access for poor Latin American livestock keepers remains limited. In effect, liberalized land markets will be pro-poor only if complementary policies to insure smallholders' competitiveness, such as microfinance policies, are in place by the time the land market is activated, but these policies are still at their early stages as it will be shown below.

Beyond secure access to land (and feed and water) smallholders need insurance against natural and market risks, as stability of production and prices is a necessary condition for them to allocate resources efficiently. In an unstable environment, in fact, they would grow low-profitable staples, use low-risk but low-productive technologies, and diversify their income sources towards off-farm incomes (de Janvry and Sadoulet, 2005). While price swings are not negative per se, as they can indicate that a market is functioning well, natural disasters are certainly harmful: in Mexico, between 1980 and 2002 weather related events have damaged over 24 million ha of crops (Saldaña Zorrilla *et al.*, 2004). Very rarely have Latin American livestock keepers had access to insurance policies, because governments have largely overlooked to comprehensively address the issue and private companies are unwilling to insure highly co-variant and risky agricultural activities. Since the last decade, however, the development of risk-swapping and risk-sharing markets, such as catastrophe bonds and weather market derivatives, are encouraging some governments to support the development of insurance markets for agricultural products. In Uruguay, government is discussing whether to subsidize up to 60 percent of farm premiums for a multiple peril insurance policy, introduce an area-yield-insurance-product, and establish a public emergency disaster fund open only to those that have already subscribed a private insurance. Mexico has established partnerships between public-private institutions to hedge against disaster risks in agriculture, including FONDEN (*Fondo Nacional para Desastres Naturales*), AGROASEMEX (*Institución Nacional de Seguros*), FOPREDEN (*Fondo para la Prevención de Desastres Naturales*) and FAPRACC (*Fondo para Atender a la Población Rural Afectada por Contingencias Climatológicas*) (Saldaña Zorrilla *et al.*, 2004; Wenner and Arias, 2004). Risk management policies, however, are in general in their very early stages, tend to focus on crops rather than livestock, and few poor farmers are benefiting from them. The majority of small livestock keepers still rely on private on-farm and off-farm insurance strategies and on the scattered and often under-funded post-shock public relief and rehabilitation interventions.

## Policies Creating Conditions for Growth

Access to basic production inputs and insurance would not be sufficient for taking livestock keepers out of poverty as imperfect markets prevent the poor from accessing production-enhancing inputs, thereby forcing them into portfolios of activities with low returns. Policies creating conditions for growth are therefore necessary for smallholders to access (i) credit and other secondary inputs, such as compound feed, and (ii) animal health services, which is a necessary conditions to produce some surplus of meat and milk to sell at the market for a profit.

In the last two decades the descaling, elimination or privatization of the public rural development banks have had a strongly negative impact on the access of smallholders to credit. In the early 1990s, however, microfinance institutions started to expand significantly their operations in Latin America: in 1992, the Bolivian NGO PRODEM (*Fundación para Promoción y el Desarrollo de la Microempresa*) –one of the pioneering microfinance institutions in the region– was converted into *BancoSol*, a regulated commercial bank; in 1995, two small microfinance institutes in Bolivia and El Salvador were transformed into the *Caja Los Andes and Financiera Calpiá*. At the same time, some regulated commercial banks and *financieras* (small banks) entered the microfinance business, such as the *Banco Solidario* in Ecuador, the *Banco de Trabajo* in Peru, and *Bancafé* and *Banrural* in Guatemala, and today commercial banks dominate the microfinance business in Latin America, providing about 75 percent of all micro-loans (Ramirez, 2004). Despite these developments, however, only 2.6 percent of the poor have access to micro-loans –with the notable exceptions of Bolivia and Nicaragua where this proportion is above 20 percent (Ramirez, 2004)– and a joint study of FAO and the University of California, Berkeley (FAO, 2003a), concludes that the development of microfinance institutions in Latin America is still ‘chaotic and incomplete’.

Beyond credit, access to secondary inputs and to adequate and affordable animal health and extension services is essential for effective livestock production. In the 1960s and 1970s Latin American governments built public systems and networks of services delivery, but the rigorous budgetary policies of the 1980s have lead to the general dismantling of public animal health services (Zepeda Sein, 1997). In particular, decentralization and privatization have driven the reforms in animal health services. On the one hand, local governments –which in Argentina, Brazil, Bolivia, Colombia, Mexico and Venezuela account for more than 20 percent of total public expenditures (IADB, 2002)– are today largely responsible for livestock disease surveillance, inspection and certification, whereas the remaining animal health services, such as clinical diagnosis and reporting, drugs and vaccines distribution, have been fully or partially devolved to

the private sector <sup>1</sup> (Moe, 1997; Nader, 1997; Perez-Trujillo, 1997). The empirical evidence of the impacts of such reforms is very mixed: in Bolivia livestock diseases are identified as the most significant constraint for approximately 20 percent of small producers (IFAD, 2004); the Inter-American Institute for Cooperation on Agriculture (IICA, 2002) estimated at less than 40 percent the capacity of Latin American national agricultural health services to comply with the WTO sanitary and phytosanitary standards.

Governments have recognized this status of affairs and are designing innovative approaches to increase the capacity of the poor to access animal health services. New policies include institutional recognition and public support to para-professionals and community-based animal health workers, government sub-contracting and networking between paraprofessionals and veterinarians. For instance, between 1997 and 2004, the number of paraprofessionals in the veterinary profession has substantially increased in Brazil, Bolivia, Costa Rica, Panama, Paraguay and Peru (OIE, 2007). While there are both successful and unsuccessful examples of these innovative approaches, they are still on a small scale and affected by two general weaknesses. First, since the animal rather than the household has been the main entry point of livestock policies in Latin America, little is known about what endemic, epidemic and zoonotic animal diseases affect the livelihoods of the poor the most. Second, policies still aim to change the diversified livestock systems, which characterize smallholder production, into more specialised ones: the focus is thus mainly on specific diseases rather than on the overall health status of the household's animal stock. As suggested by Brathwaite (2005), therefore, Latin American and Caribbean countries should first of all adopt and implement new strategic visions for their animal health services; only then technical services can be truly effective.

## **Policies Sustaining Growth**

In the long term, given changing consumer preferences and increased market integration, smallholders should be able to respond to new market demands so as not to be crowded out by large commercial competitors. Public policies allowing small livestock keepers to respond to changing markets include: (i) research activities in animal feeding and breeding to support smallholder production of high quality commodities; (ii) regulatory and extension policies allowing smallholders to satisfy national, regional and international food safety and quality standards. These are goods with a public component and need to be supplied / regulated by the government.

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<sup>1</sup> In Mexico, the proportion of graduate veterinarians working in the public sector fell from about 85 percent in the 1970s to 19 percent in 2004 (OIE, 2007; Perez-Trujillo, 1997); in 2004 in Bolivia only 12 percent of the veterinarians worked in the public sector, 5 percent in Brazil, 9 percent in Costa Rica, 6 percent in Guatemala and 16 percent in Paraguay (OIE, 2007).

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Agricultural and livestock research in Latin America has long been managed by public research institutions, but tight fiscal policies in the 1980s have forced governments to restructure their agricultural research agencies along quasi-private and private lines. In Ecuador, livestock research funds are managed through FUNDAGRO (*Fundación para el Desarrollo Agropecuario*) that receives both public and private funds; in Peru, five research stations have been transformed into private foundations; in 1995 private farmers' groups contributed 29 percent to the total research budget in Colombia; in Ecuador and Mexico private companies accounted for 36 and 28 percent of all research expenditure (de Janvry *et al.*, 1997; Morales, 1998). Quasi-private institutes are expected to conduct research according to market demand rather than policy initiatives, and thus contribute better to increased livestock productivity and poverty reduction. However, while administrative autonomy has been achieved in several instances, most semi-private agricultural research centres still receive 80-90 percent of their funding from the public sector, such as in Colombia, Honduras, Guatemala, Mexico, and Panama, and overall they just account for 15 percent of total current research investments, a level insufficient to cover the cut in public research budgets (Morales, 1998).

To improve the effectiveness agricultural research and overcome budget constraints, Latin American countries have created competitive funding mechanisms as an alternative means of allocating research resources, the underpinning idea being that this would reduce misallocation of funds. Research centres, for instance, are expected to compete for public funds allocated either to basic research projects or to innovation and applied research projects. However, while semi-privatized independent research centres could be more efficient and market responsive than public agencies, there are good reasons for public involvement in research activities. First, private research institutes may lack the incentives to invest resources in public goods; second, in some cases high start-up costs and uncertain outcomes prevent private entrepreneurs from entering the research business; third, the poor are not considered 'good clients' by private research centres; fourth, competitive mechanisms of funds allocation often involve high transactions (e.g. writing and screening proposals) and rent-seeking costs (e.g. policy lobbying), and take research in the direction of short-term outcomes. These rationales suggest that the public sector has certainly a role to play in guiding research activities. In particular (i) public funds should be allocated towards animals and livestock products where private research is not forthcoming, i.e. products for which producers' groups are not able to generate a market demand; (ii) the public sector should fund research on livestock products that countries are trading significantly, as in these cases domestic price effects would be minimal and producers could capture the largest benefits; (iii) public funds should be allocated towards non-labour displacing technologies; (iv) since countries are imposing growingly stringent requirements on food imports, funds should be also directed towards research aimed at increasing the capacity of smallholders to satisfy stringent sanitary and phytosanitary standards (SPS).

In general, SPS are of concern for those Latin American countries exporting livestock products, such as Argentina, Chile, Uruguay, Paraguay, Brazil and Mexico. For example in 2000-2001 food and mouth disease broke out in the River Plate Basin: it infected about 150,000 animals in Argentina with an estimated foregone production of US\$ 40 million per month between July 2000 and January 2002; in Uruguay about 77,000 animals were infected and the value of exports fell by 40 percent (US\$ 152 million) (World Bank, 2005a). These are not exceptional cases, as in the last ten years animal and zoonotic diseases have accounted for 40 percent of concerns raised in the WTO SPS committee (WTO, 2002). SPS issues, however, should also be addressed by non-livestock exporting countries, as in the medium to long-term local consumers will be demanding and willing to pay for safe(r) and high(er)-quality products. It is therefore necessary to formulate and implement policies allowing small livestock keepers to start complying with stricter safety and quality standards.

#### **IV. Institutional Gaps in Pro-Poor Livestock Marketing Policies**

Efficient smallholder producers are not necessarily able to make profitable use of their livestock assets; they must also be capable to commercialize meat and dairy products at a profit. Three major elements affect smallholders' marketing ability: (i) households micro characteristics, such as their asset positions; (ii) meso-infrastructural networks that determine transaction costs to markets for communities/regions; (iii) the institutional framework that governs the market relationships between livestock keepers, traders, processors, wholesalers and retailers.

Marketing policies in Latin American have largely focused on public actions levelling the differences between household idiosyncratic characteristics (see previous section) and on infrastructural policies (World Bank, 2005b), while policy makers have only marginally addressed those institutional bottlenecks affecting smallholders' access to markets. In particular, though governments have improved the effectiveness of the broader institutional infrastructure underpinning access to markets (e.g. better rule of law and reduced corruption level), they have neglected to establish effective rules and regulations affecting and influencing the contractual relationships among the various actors along the livestock supply chain, which are key to link smallholders to the fast-growing mainstream markets for meat and dairy products.

In a neo-institutional economic perspective, the contracts the various stakeholders establish along the livestock supply chain can be thought as the optimal response of producers, processors, traders, wholesalers and retailers to the 'rules of the game'. In particular, economic actors are expected to agree upon those contracts that maximise their returns subject to the informal (norms, customs, mores and traditions) and formal (constitutions, laws, decrees) rules that govern society (Demsetz, 1967). For instance, if labour legislations make particularly

onerous to employ permanent labourers, a livestock entrepreneur might outsource some of its production/processing activities; if the fees and charges for the use of public slaughterhouses are particularly high, livestock producers may opt for home slaughtering. According to the neo-institutional economics, therefore, the optimal response of stakeholders to existing rules and regulations, namely to the current policies and institutional framework, determines the ways marketing activities or supply chains are effectively organised<sup>2</sup>. In Latin America, it is possible to identify six different typologies of livestock supply chains, from pure spot market transactions to vertical integration.

- i The spot market supply chain relies on simple, largely informal, transactions between several traditional producers, wholesalers and retailers, with poor producers being often themselves the retailers. Slaughter and processing of small animals are carried out by the household itself, and raw products sold in *mercados de plaza* and *feria libre*. In Managua, for instance, there are about 359 wet markets (Schütz *et al.*, 2004).
- ii A second type of supply chain centres on few processors/wholesalers, such as public slaughterhouses, dealing with several smallholders and retailers. In Nicaragua, for example, there are 98 municipal slaughterhouses linking small cattle producers with local butcheries (Schütz *et al.*, 2004). Sometimes, due to high transaction costs, small producers cannot access municipal slaughterhouses if not organized in cooperatives.
- iii A third type of supply chain, which Berdegué *et al.* (2004) dubbed the 'decentralized mixed procurement system', is constituted by few large retailers, few wholesalers/processors and quite a number of smallholder producers. This supply chain is dominated by large retailers –e.g. SuperSelectos in El Salvador– that require relatively high quality standards compared to the typology-two supply chain. Sometimes small poor farmers are excluded from this chain, as wholesalers prefer dealing only with few specialized producers which can be easily monitored and supervised.
- iv The 'centralized passive' supply chain involves a direct relationship between few large producers, one large industrial processor, such as San Martín slaughterhouse in Nicaragua processing up to 400 cattle a day, and some large retailers. This structure allows defining and enforcing strict safety and quality regulations and small producers are typically excluded, either because unable to satisfy safety and quality requirements or

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<sup>2</sup> On the other hand, the way the livestock production chain is organized, and the process of economic development it triggers, can stimulate itself institutional changes, as the relationship between institutional change and economic development is clearly two-way. For instance, in the 1960s in monsoon Asia international research institutions produced much of the technological change that led to growth of agricultural output per hectare. But this same technological change determined disequilibria between the returns and the costs of factor inputs, so as to foster the constitution of new institutions governing the use of production factors, particularly new labour contracts in rice cultivated areas (Ruttan and Hayami, 1984).

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because large processors prefer dealing with few large producers to reduce transaction costs.

- v The 'centralized pro-active' supply chain is based on a direct relationship between few commercial producers, one large industrial processor, and some large retailers. The difference with the 'centralise passive' supply chain is that large producers receive technical assistance and training by the processor.
- vi Finally, the vertically integrated supply chain centralizes all activities, from production to wholesale/retail activities, and transactions are based on managerial decisions rather than on the price mechanism. Examples are largely in the poultry sector, such as Sadia, Perdigão, Frangosul and Seara poultry breeders in Brazil that account for about 40 percent of a total of 3.5 billion slaughtered chicken in 2001, and for about 75 percent of total poultry exports (Farias Pereira and Csillag, 2003).

Despite a variety of livestock supply chains existing in Latin America, only the 'decentralised mixed procurement system' allows smallholders to access the fast-growing mainstream markets for high-value meat and dairy products at a profit. Livestock marketing, however, is increasingly concentrated in 'centralized passive' and 'centralized pro-active' supply chains, which are constantly expanding in rural areas and targeting medium to low-income consumers too<sup>3</sup> (Reardon and Berdegué, 2002; Schütz *et al.*, 2004). The trend, therefore, is apparently harmful for smallholder producers who, sooner or later, will possibly be forced out of the thriving livestock markets.

There is however evidence that, under some circumstances, smallholders can well compete in high-value agricultural product markets. Firstly, due to imperfect substitutability between family and wage labour, smallholders can produce as efficiently as large-scale industrial units (Hayami and Otsuka, 1993). Secondly, centralized production chains are not necessarily efficient, such as for example the beef industry in Argentina and Uruguay (Jarvis and Bervejillo, 2000), and there are diseconomies of scale related to animal waste disposal and disease risk (Hennessy *et al.*, 2004). Thirdly, Farina *et al.* (2004, quoted in Berdegué *et al.*, 2004) show that in Brazil the expansion of supermarkets has not meant that traditional retailers and independent small stores have been displaced. Fourthly, there are instances of win-win contracts between smallholders and large processors/retailers, i.e. of smallholder-based livestock production chains, showing that under some circumstances small producers can benefit from the growing demand of high-value livestock products (Céspedes and Paz, 2005; FAO, 2004a). Finally, a neo-institutional

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<sup>3</sup> In Argentina, Brazil, Chile, Colombia, Costa Rica and Mexico, in 2001 supermarkets had a population weighted average of 60 percent of food retailing, and about 20 to 40 percent in all other Latin American countries (Reardon and Berdegué, 2002).

economic analysis would conclude that the current trend towards marketing concentration is not exogenously given, but determined by the current 'rules of the game' that lead stakeholders to establish contracts that are potentially harmful for smallholders – i.e. 'centralized passive' and 'centralized active' supply chains. All this suggests that there exist opportunities to formulate policies allowing smallholders to commercialise their livestock products at a profit.

Smallholder-based production chains have usually originated from projects and specific programmes –i.e. directly managed activities in a *ceteris paribus* institutional environment– rather than from institutional policies –i.e. changed rules of the game leading to spontaneous win-win contracts between small producers and large processors/retailers (e.g. Köbrich, 2004). Funding new projects and programmes to promote equitable contracts between smallholders and large processors/retailers is however not a practical strategy to reduce poverty widely, though some lessons might be certainly gained from analysing existing contracts. Some practical policy hints could instead be derived from the neo-institutional economics, in particular from the principal-agent framework, which has been extensively used to explain land contracts in rural areas (Hayami and Otsuka, 1993).

The principal-agent framework assumes that there are two economic actors willing to transact but having conflicting objectives – e.g. the small producer and the processor are willing to cooperate but the former (latter) wishes to sell (purchase) the lowest (highest) quality milk at the highest (lowest) price. Since there is imperfect and asymmetric information between the parties, both have incentives to behave opportunistically, to cheat and shirk either before (adverse selection) or after (moral hazard) the contract has been signed. In particular, in case of contracts between agri-processors and small producers, both agents lack information about the 'characteristics' of the counterparty before the contract is signed. For instance, the processor is not confident that the small producer will be able to deliver on time an agreed quantity of produce, as he lacks detailed information on farmer's production technology; smallholders do not know whether the processor will effectively pay the established unitary price. After the contract is signed, neither parties can easily observe whether the counterparty is effectively complying with contractual obligations; for instance, the small livestock keeper might sell his produce to a third party offering a better deal; large processors/retailers might not willing to share the benefit of increased market price with small producers. Finally, the terms and penalty clauses against possible contract violation cannot be stipulated to cover all possible contingencies; and even if contract violation is detected, appeal to mediation by a third party, typically a court, is often prohibitively costly.

In sum, contracting parties along the livestock supply chain confront a number of costs, including (i) search for counterparties; (ii) screening the potential counterparties; (iii) negotiating contractual details; (iv) monitoring contract compliance; (v) enforcing contract in case of

breaching. In Latin America, the current rules of the game induce stakeholders along the supply chain to reduce these costs through establishing 'centralized passive' and 'centralized active' procurement systems, which often bypass small livestock producers. This is so as a large processor/retailer establishing long-term contracts with one or few large producers can create a trust-based relationship, reduce screening and monitoring costs, and can itself 'punish' the supplier in case of contract breaching, e.g. with reduced orders, and reward it in case of good performance, e.g. with increased orders.

If the current rules of the game lead towards a concentration of production and distribution, institutional policies that change those rules, i.e. reduce the costs that stakeholders along the supply chain face when contracting, might support the development of 'decentralized mixed procurement systems' or, in general, of supply chains that allow smallholders to benefit from the fast-growing downstream markets of meat and dairy products. To this aim, Latin American policy makers could develop a number of policies, such as:

- i Governments could reduce screening costs for both parties, i.e. should establish open lists of reliable producers and processors/retailers. In general, smallholders, cooperatives and large processing and retail firms have their own information about the quality/trustworthiness of contracting parties; collecting this information and make it available to all stakeholders along the livestock supply chain could be a first step in this direction.
- ii Governments should reduce the bureaucratic costs of negotiating contracts. First there are fixed costs invariant with respect to the transaction –e.g. paper and fees– that might induce large firms to deal with one or few suppliers rather than with many smallholders; and then there are costs related to the quantity transacted. Governments might reduce the bureaucratic costs of transactions in general, charge regressive fees/taxes in case of multiple contracts and / or progressive fees increasing with the quantity transacted per contract.
- iii Governments should reduce the bargaining/negotiating costs for both parties. For instance, they might specify, in cooperation with representatives of all stakeholder groups, standard types of contracts that parties may wish to agree upon.
- iv Governments should level the playing field of contracting, as smallholders are often in a weaker bargaining position vis-à-vis large processors/retailers. For instance, contracts should be written, signed and registered (at low/no cost for parties) and also posted publicly in *plazas*, churches, local government offices, etc. Complementary policies would include posting publicly market prices, which small livestock keepers are often not aware of, and have marketing and contracting strategies in the curricula of extension workers.

- v Governments should hinder the creation of monopsony power by processors and retailers, otherwise smallholders' assets would become a source of potentially appropriable quasi-rents having low salvage value outside the bilateral contractual relationship. At the same time, governments should avoid the creation of monopoly power by smallholders as excessively powerful producers' organizations might squeeze processors/retailers that, given their asset-specificity, could respond by vertically integrating or looking for other, less organized suppliers.
- vi Governments should not only generically improve the efficiency of the judiciary system, but also support the establishment of rapid, low cost local arenas to resolve conflicts among smallholders and large processors/retailers.

The suggested institutional policies are explorative and their theoretical underpinning and empirical feasibility should be subject to rigorous scrutiny. The ultimate objective, however, is to highlight that there could be simple and often low-cost institutional policies that can promote the establishment of smallholder-based supply chains. Note that the focus is not on traditional macro-institutional policies –e.g. improving governance effectiveness– but on rules and regulations governing the specific relationships among stakeholders in the livestock supply chain, the change of which might facilitate equitable and profitable access to markets for small livestock keepers, thereby improving their livelihoods.

## V. Summary and Conclusions

Rural poverty is widespread in Latin America and, since smallholders make up the majority of the rural poor in all countries in the region, enhanced productivity and / or returns to their assets might certainly contribute to broad-based poverty alleviation. This paper argued that good opportunities are offered by diversification into high-value agricultural products, particularly meat and dairy products, as a large part of the Latin American rural poor depend on livestock as part of their livelihoods, and critically reviewed the existing policy framework allowing smallholders to both produce and commercialise efficiently high-value livestock products. Acknowledging that the pro-poor livestock sector development require more than efficient farm animal policies, the paper attempted to review the overall framework affecting the sector development, including policies 'reducing vulnerability', policies 'creating conditions for growth' and policies 'sustaining growth' and, eventually, 'marketing policies'. The paper, however, did not comprehensively review and comment existing policies, but aimed to detect and record broad policy trends and gaps, which of course differ in their details depending the country.

Policies allowing smallholders to produce efficiently include (i) policies supporting access to land, feed/forage, water and risk-coping mechanisms; (ii) policies allowing small livestock holders to

access credit, subsidiary inputs, and animal health services; (iii) policies allowing smallholders to continuously adjust to changing consumer preferences. These all policies were long dictated by macroeconomic and institutional reforms, focusing around liberalization, macro-stability, privatization and decentralization: land markets were activated, veterinary services privatized, research budgets severely cut. However, in recent years, the recognition that markets by themselves do not necessarily produce efficient outcomes and that market-supporting institutions are essential to support pro-poor economic growth, have led Latin American policy makers to design innovative policies to promote smallholder access to productive inputs, including the institutionalization of microfinance institutions, the institutionalisation of community based animal health workers to provide veterinary services in rural areas, the competitive allocations of public research funds. While these policy shifts are encouraging, Latin American policy reforms appear too cautious, policy makers still over spend in private goods and under-spend in public good provisions (López, 2005), and more should be dared to allow small livestock keepers to become efficient and competitive in their production activities. Researchers have a role to play too, as some key questions remain still unanswered: what else one can do to improve the efficiency of both the government and the market? What is the right balance between the government and the market? How should that balance change over time as markets improve and the competencies of government change?

To examine policies affecting smallholders access to markets, which are interconnected to the capacity of poor livestock keepers to produce efficiently, the paper followed an institutional economic approach and argued that the various typologies of livestock supply chains existing in Latin America represent the optimal response of the stakeholders along the livestock supply chain to the current policy and institutional environment (the rules of the game). A variety of livestock supply chains exist in the region, from pure spot markets to fully vertically integrated chains. The overall trend is towards centralized supply chain based on few large producers and large processors, with the poor smallholders largely excluded. This trend, however, does not imply that smallholders cannot benefit from the thriving mainstream livestock markets, as shown by the many successful contracts established between large processors and smallholders. The principal-agent literature helps to identify some institutional policies that might support the establishment of smallholder-based supply chains allowing poor livestock keepers to access high-value product markets equitably and efficiently. These include public actions reducing the transaction costs for searching and screening partners along the livestock supply chains, mitigating the incentives for opportunistic behaviours, and supporting contract enforceability. Note that the focus is not on high-level macro institutional policies, but on the day-to-day rules that govern the specific interrelations among stakeholders in the supply chain.

Finally, whereas the paper appears to a-priori defend small livestock producers, this is not some nostalgia for the 'small and beautiful' perspective. It is based on the assumption that

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smallholders can be as efficient producers as commercial ones and that in Latin America the development of large capital intensive production farms and supply chains has rarely generated enough demand for the displaced labourers. It has forced them to urban migration, where only a few have found productive employment in modern urban industries, and most derive their subsistence from informal economic activities. Supporting smallholder livestock keepers, therefore, might trigger an 'alternative path of economic development' (Hayami, 1998) which is the expansion of small-medium on-farm, off-farm and non-farm agricultural and industrial activities in rural areas, promoting both economic growth and poverty reduction.

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**Ugo Pica-Ciamarra**

Livestock Information Analyst

Tel: +39 06 570 53897

Email: [Ugo.PicaCiamarra@fao.org](mailto:Ugo.PicaCiamarra@fao.org)

**Joachim Otte**

Programme Coordinator

Tel: +39 06 570 53634

Email: [Joachim.Otte@fao.org](mailto:Joachim.Otte@fao.org)

**Jeroen Dijkman**

Livestock Development Officer

Tel: +39 06 570 54747

Email: [Jeroen.Dijkman@fao.org](mailto:Jeroen.Dijkman@fao.org)

**Pro-Poor Livestock Policy Facility**

Food and Agriculture Organization - Animal Production and Health Division

Viale delle Terme di Caracalla 00153 Rome, Italy

Fax: +39 06 57055749

PPLPI website at: <http://www.fao.org/ag/ppipi.html>