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Transforming Lives with Livestock-based Agribusiness

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Abstract

This paper is concerned with improving the livelihoods of rural households in China — especially those involved in ruminant livestock production — in the context of market-oriented reform. Two broad categories of household are considered — diversified households and specialised households.

Livelihoods are largely determined first, by the way the households interface with the industries or industry in which they are involved and secondly, by the development paths of these industries.

Traditionally, the dominant Chinese approach to industry development is policy rather than market driven. Interventionist policies are introduced that target the construction of production bases with the aim of increasing physical output. At a later stage, attention turns to the development of processing facilities,

hopefully, to value add. Little attention is given to development of agribusiness aspects of the marketing chain or to market demand.

Nowadays, China is beginning to make the transition from an output-oriented form of industry development to policies that aim to create 'modern' agribusiness sectors. However, the interventionist-targeting approach remains dominant and the emphasis in recent years has been on the development of highly-concentrated, vertically-integrated marketing chains controlled by large semi-government corporations that aim at the high-value end of available markets.

The paper argues for a more facilitative policy approach to encourage the growth of a diverse agribusiness sector in China to allow a much wider range of households to participate in, and benefit from, the ruminant livestock revolution.

1. Introduction

At the National People's Congress in March 2002, Zhu Rongji — the then Chinese Premier and the most respected and powerful economic leader in China over the last decade — stated that his 'biggest headache' was how to improve the livelihood of China's farmers.¹² Although the plight of China's farmers is afforded lip-service on nearly all such occasions, China is now genuinely and urgently searching for ways to bridge the widening

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¹² The term Zhu used is *nongmin* which can be translated as peasants, more politely as farmers (*nongfu*), or, more accurately and as implied in this paper, households registered in rural areas of China, regardless of their major economic activity (*nonghu*).

gulf between the mainly urban rich and the rural poor.¹³

Rather than call for radical reform or policy revisions to achieve this imperative, Zhu renewed the country's commitment to market-oriented reform and to meeting the obligations of WTO accession. Perhaps in recognition of the inevitability of inequality in this environment, he also quoted the late leader Deng Xiaoping's now famous call for some people to 'get rich first' (Gittings 2002).

This paper is concerned with improving the livelihoods of households in rural China in the context of market-oriented reform.¹⁴ It focuses on two broad categories of rural households: first, 'diversified households' in which lifting absolute incomes above, and preferably well above, poverty levels is the main issue; and, second, 'specialised households' where increasing incomes, especially relative to those in urban areas or other sectors of the economy, is the primary goal. Key features of these rural households that influence the impact of various industry policies are considered in Section 2.

The livelihoods of rural households are largely determined: first, by the way that they interface with the industry or industries in which they are involved; and secondly, by the development paths of these industries. The interfaces can be market-determined through agribusiness linkages and/or can be policy driven through administrative intervention and targeting. Similarly, industry development paths can be determined in response to markets and/or the result of official policies. Special reference is made in this paper to a suite of ruminant livestock industries, and to cattle and sheep in particular.¹⁵ For these industries, both the

household-industry interfaces and the industry development paths have been more policy than market driven.

Section 3 examines the traditional Chinese policy approach to industry development of building a production base and increasing output in the early stages of industry growth, and expanding processing capabilities and increasing industry value later. In the case of the ruminant livestock industries, direct intervention and targeting have been used to stimulate industry growth but — as outlined in Section 4 — with different outcomes for diversified and specialised households.

How Chinese policy-makers should make the transition from interventionist-targeting policies to more facilitative industry policies is the focus of Section 5. It is argued that these 'second round' policies should be aimed at the further development of a disaggregative agribusiness sector to encourage large numbers of diversified households to become more specialised by linking them with mid-value market segments.

However, a strategy based on encouraging specialisation may not be possible, or even desirable, in some rural areas. Consequently, non-market-determined support policies for diversified households are also discussed. The latter policies are crucial to broadening the benefit from industry development by addressing and minimising adverse impacts.

2. Categories of rural households

Since 1978, when the Household Production Responsibility System (HPRS) ushered in the Chinese reform era, rural households have taken their place as the 'basic unit' of Chinese agriculture. The HPRS has given rise to complex structures in the rural economy for a number of reasons. *First*, households notionally have more freedom to make decisions based on market signals. At the same time, however, local economies remain based on collective ownership and management where local leaders exert a large influence on household decision-making.¹⁶ *Second*, farmers have been forced

For a similar comprehensive coverage of the Chinese sheep industry see Longworth and Williamson (1993) and Longworth and Brown (1995).

¹⁶ Local rural administration is expressed in China in terms of 'dual-level management' or independence-intervention (Findlay *et al.* 1993).

¹³ Rural China is, after all, the heartland of the Communist Party and the key to continued national stability. Growth in rural incomes declined from 4.6% in 1997 to 4.3% in 1998, 3.8% in 1999 and 1.8% in the first half of 2000 (National Bureau of Statistics Special Report, 9 September 2000, available in Chinese at www.stats.gov.cn)

¹⁴ Ellis (2000, p. 10) states 'A livelihood comprises the *assets* (natural, physical, human, financial and social), the *activities*, and the *access* to these (mediated by institutional and social relations) that together determine the living gained by the individual or household'.

¹⁵ Amongst many other things, Longworth *et al.* (2001) provide a detailed description of the Chinese cattle and beef industry, Brown *et al.* (2002) analyse the industry from a spatial perspective and Waldron *et al.* (2003) develop the ideas in this paper as they relate to the cattle and beef industry in much greater depth.

to sell about 30% of their grain to the State under compulsory procurement arrangements, and most of the remainder of China's grain is consumed by rural households themselves under semi-subsistence systems. *Third*, large numbers of people from rural households engage in off-farm employment in their local areas (as traders, processors) or in more distant urban areas (as migrant labour). *Fourth*, rural households can be impacted by — and are incorporated into — larger organisational forms including local enterprises, larger agro-industrial enterprises, collectives and co-operatives.

Within the complex structural landscape that has emerged, many different types of rural households can be identified. Nevertheless, in the context of examining how industry development and industry policies affect households, two important broad categories of rural households can be identified, namely *diversified* households and *specialised* households. Detailed characteristics of these two broad types of household (and other more detailed household categories) appear elsewhere.¹⁷ This section considers only selected aspects of these two major types of household salient to how industry policies and/or market developments may impact upon them.

Diversified households dominate primary production aspects of virtually all of the rural industries in China. For example, they raise about 90% of the cattle and perhaps a similar proportion of sheep and goats. They are, therefore, an important unit of analysis from both industry and rural development perspectives.

Unlike specialised households that devote most household resources — land, labour, capital — to a particular activity, diversified households spread resources across a number of activities.¹⁸ In agricultural areas of China, a few head of cattle, sheep or goats are raised in courtyards, often with other types of livestock (especially pigs and chickens)

but usually with a focus on cropping activities. In pastoral areas, mixed herds of sheep, goats, cattle and other 'large' livestock are common.

Another dimension of diversified household livestock production is that the breed and production systems are based on the livestock being dual purpose. For example, diversified households use local or improved sheep for both coarse wool and mutton production rather than raise fine-wool sheep. Cattle are selected and raised not just for beef production, but also for draught, transport and milking purposes.

Apart from being involved in multiple and dual-purpose activities, diversified households are often partly self-sufficient (as the household buys or hires few resources from outside the household system) and semi-subsistent (as a part of the produce is consumed on-farm). In addition, outputs from some activities (such as draught power and manure from cattle production, for example) are used as inputs into other activities (such as cropping) and are often undervalued or not valued at all.

Diversified households can be said to be subject to 'soft budget constraints' because the self-sufficient and semi-subsistent nature of their operations insulates them from the full impact of market forces in terms of their exposure to external product and input prices. The diverse set of household activities can reduce risks in uncertain market and climatic conditions if output prices or production yields of these activities are not highly correlated.¹⁹ Diversified production, therefore, can be seen as a low-risk type of production system, especially in terms of market risk.

On the other hand, diversified household production systems are often unsuited to the demands of increasingly discerning consumers, especially in the more market-oriented economic system emerging in China. Diversified households operate at low technical levels and lack economies of scale in the areas of inputs, production and marketing. Nearly all of the output sold from diversified households is exchanged on local low-value mar-

¹⁷ For example, detailed characteristics and analysis of diversified households, specialised households, and household feedlots are reported in Longworth *et al.* (2001, Chapters 4–6).

¹⁸ Officials in the Ministry of Agriculture (MoA) structure regard households that devote 60% of their investment to a particular activity as being specialised in that activity, although the figure does vary across regions. Indeed, some regions regard a household as being specialised in an activity on output alone — such as five head of cattle. The latter definitions are loosely related to the need for households to engage external (hired labour) inputs.

¹⁹ Ellis (1999) defines rural livelihood diversification as 'the process by which households construct a diverse portfolio of activities and social support capabilities for survival and in order to improve their standard of living'. In small-scale farming systems, livestock act as assets — a form of 'savings' — for small households that can be drawn on later. They are also a major activity for employment of women and children.

kets. Furthermore, diversified households will come under increasing pressure if ‘hard budget constraints’ are applied through pressure to modernise owing to WTO accession, through market reform, and as households become more aware of opportunity costs of household resources.²⁰

Specialised households represent a step up the continuum in terms of scale and degree of commercialisation. They allocate most of their household resources to a single activity (say sheep) in the production of a particular commodity (wool) or even a particular type of commodity (fine wool). In the case of cattle and beef, many households progressed from owning a single dual-purpose cow to becoming specialised as a cow-calf producer or as a fatterer for beef production. Many herders in the pastoral region are switching out of fine wool or dual-purpose sheep production and into specialised mutton production. In both cases, producers concentrate on the production of particular commodities (such as beef, wool or mutton) rather than the dual-purpose types of livestock mentioned for diversified households. This enables them to produce better quality produce than diversified households, aimed at higher-value markets.

One feature of household specialisation is that many former diversified households have built on knowledge and savings gained as primary producers to move into specialised non-agricultural (though still rural) business activities (i.e. into agribusiness). These include trading activities (for livestock and commodities such as beef and hides) and early-stage processing (such as household slaughtering, shearing and wool assembly).

Another feature of specialised household production is that they can be integrated into larger organisational forms. In the beef industry, many specialised households enter into ethnic or extended family networks that span from cattle production to beef retailing. In the fine wool industry in some pastoral provinces, but also in the beef and mutton industries, specialised households are integrated into agro-industrialised structures through supply contracts. In all livestock industries, specialised households are linked together in specialised villages, or lower-level specialised ‘small areas’.

Specialised households represent a step up from diversified households in terms of commercialisa-

tion and are subject to ‘harder’ budget constraints. They are more likely to employ production inputs such as labour, capital and feedstuffs from outside the household system. Furthermore, the vast bulk of their outputs is sold on competitive, higher-value and sometimes distant markets.

As a result of these factors and because of their ability to form larger integrated networks, specialised households can respond more quickly and accurately to the demands of increasingly discerning consumers than diversified households. Thus, household specialisation can be a major means of raising the incomes of rural households in China if they are able to access premium consumer markets.

The downside to household specialisation is the greater risk exposure. Analysis in Longworth *et al.* (2001, Chapter 6) reveals that specialised cattle-producing households are more profitable than diversified households under ‘normal’ market conditions. However, under adverse market conditions — in terms of the alignment of feed to beef cattle prices — returns to specialised household cattle production and to the household as a whole could be lower than those of the diversified household.

3. Targeted industry development

In the post-1978 reform era, both ‘traditional’ rural industries and ‘new’ rural industries have undergone expansion. Traditional rural industries include staples such as grains and pork, and other industries such as wool that have deep roots in the Central Planning era. ‘New’ industries which have emerged as a result of the reforms include a range of cash crops, speciality products, and ruminant livestock industries such as beef, mutton and milk.

With the exception of some ‘staples’ such as grain, tobacco and cotton, the production and marketing of agricultural commodities is now notionally free and open. Nevertheless, the government continues to intervene in virtually all aspects of rural industries, and a large part of the rural industry expansion can be attributed to government measures.

Measures designed to develop and modernise rural industries have been retained from the Central Planning era. These measures have now been combined with some elements of East Asian Newly Industrialised Country (NIC) style targeting using corporatist structures. Industry policy-makers coordinate with decision-makers at local levels to target industries through the ‘carrot and stick ap-

²⁰ For an analysis and discussion of how diversified household cattle production may seem viable under semi-subsistent valuation but unviable under commercial valuations, see Longworth *et al.* (2001, Chapter 6).

proach'. The 'carrot' includes administrative encouragement, funding and preferential taxation and other policies. The 'stick' refers to the ability to coerce and co-ordinate the involvement of industry actors, and the use of various administrative barriers. Industry expansion occurs not only because of 'consumption-pull' forces, but also 'policy-push' forces. Furthermore, it is possible to identify similar types of industry-policy-driven development paths across a wide range of rural industries.

The Chinese approach to industry development usually has immediate and rapid results in terms of output figures in new rural industries. The picture is particularly dramatic in Chinese livestock industries, especially in the ruminant products of beef, mutton, and milk (see Delgado *et al.* 1999; Longworth *et al.* 2001; Simpson 2003).

In the initial stages of industry development, industry policy is targeted at expanding production. Expansion can involve 'kick-starting' new or small rural industries or growing existing rural industries. Industry planners stress the need to first establish a 'production base' (*shengchan jidi*) which refers mainly to primary production. The measures to achieve the production base include extension activity, infrastructure development (including securing land use), the development of demonstration areas and establishment of new projects, along with direct subsidies and other preferential policies.

The target of these initial production expansion policies are often diversified households who make up the vast bulk of households in these industries. The aim is to encourage these households — or provide them with the incentive — to engage in these activities and through their weight in numbers, to create a sizeable production base.

Only when the production base has been established through the widespread participation of households, is attention turned to upgrading processing capacity and industry modernisation, often with the aim of accessing higher-value markets. The access to and profitability of these higher-value markets, however, is often presumed rather than tested through market surveys, viability studies or other means.

These patterns of industry development are common to many rural industries. Moreover, similar development strategies are often pursued by many regions at the same time without inter-regional co-ordination or co-operation. The result has been widespread replicated development in many indus-

tries. The ensuing problems are compounded because there is considerable scope to miscalculate demand signals with administrative targeting.

Initial periods of production growth are inevitably followed by problems of over-supply and price corrections. Such problems are pronounced in China in almost all rural industries.²¹ In the 1990s, virtually all livestock industries suffered periods of over-production that resulted in very low prices. Dramatic examples of this occurred in the milk powder industry in 1991–92 and in the egg industry in 1996–97 (Lin 1997, p. 203). In 1999–2000, pork prices fell to the point (Rmb3 kg⁻¹) where it became a liability to own a pig. The beef industry experienced a sharp market correction in 1996/97, while the lengthy expansionary period in the dairy industry has put severe downward pressure on milk prices to the extent that many producers are unviable. Ominously, there are signs that the more-recently targeted mutton industry may be progressing down a similar path.

Confronting these market realities inevitably leads to periods of industry rationalisation, not only in industry size and structure, but also in government policy. In the beef industry, hundreds of thousands of households exited the industry in response to market corrections in the late 1990s (Longworth *et al.* 2001). The hard budget constraints faced by specialised households saw them respond more to the market corrections than the diversified households subject to soft budget constraints. Although there are often long response lags and obstacles to the mobility of households out of the industry, in areas where industry rationalisation has occurred, it has left a more competitive and resilient industry structure.

Over time, policy enthusiasm is also 'rationalised' to more realistic expectations. More often than not, however, policy-makers simply transfer their enthusiasm to the next 'sunrise' rural industry. Alternatively, changes in policy design are made, such as switching attention to the production of higher-value products, although little attention is given to accessing or developing higher-value markets.

²¹ The Assistant Governor of the Central Bank, Governor Li Ruogu recently said: 'I don't know why everything in China is oversupplied. A hundred per cent of commodities are oversupplied. Why? I don't know. I'll give you an example: the lychee ... five, six years ago they cost Rmb20 or Rmb30 for a half kilo. Now it's Rmb2.' (Studwell 2002). Problems of over-production and replicated development extend well beyond agricultural industries into white goods, airlines, low value steel and other industries.

These patterns of industry development are most pronounced in 'new' post-reform era industries (such as beef, mutton and milk) that began developing as sizeable commercial industries only in the 1990s. Nevertheless, a similar pattern in industry policy emerges in relation to 'old' longer-established industries with roots in the Central Planning era. Fine wool production is an example of one such industry.

In the 1980s, fine wool production in China was supported and protected through a range of measures outlined in Longworth and Williamson (1993) and Longworth and Brown (1995). These measures included subsidised production inputs (such as artificial insemination and other veterinary supplies) as well as pricing and procurement measures to underpin domestic wool prices. Protection also occurred at the Central level through import tariffs and other non-tariff barriers (Brown and Longworth 1995). State farms that dominated fine wool production at the time were also insulated from market forces.

In the later half of the 1990s, policy enthusiasm and hence funding for the fine wool industry ebbed, particularly at the Central level, but also in some provinces and prefectures. As discussed in Section 5, industry support activities that were previously well developed, publicly funded and accessible to individual herders — such as sheep grading and breeding — regressed. This scaling back of support and protective measures in the late 1990s has seen the demise of fine wool production in all but a handful of pastoral counties.²² In particular, State Farms have chosen to enter into other more lucrative or strategic industries and to decentralise decision-making power to individual households by contracting land controlled by the State farm out to these households. Many of these households in the State Farm system, as well as households outside the system, are now in the process of switching from specialised fine wool production into mutton or, more commonly, into dual-purpose (coarse wool and mutton) production systems.

With the recent improvement in international wool prices and hence domestic prices in China, however, the fine wool industry in some parts of China is making a comeback. A new vertically-integrated 'corporatist' production and marketing system is

emerging, involving government bodies at various levels and horizontal structures, inter-regional enterprises, associations and, in some cases, contracted households. That is, the industry remains targeted in some areas, but using more commercially-oriented targeting mechanisms than those of the Central Planning and early reform eras. This trend towards large vertically-integrated agribusiness corporations is also occurring in the higher-value market segments of many other rural industries, including the newer ruminant-animal-based industries such as milk, mutton and beef.

4. Impact of industry targeting on rural households

One important reason for rural industries to be targeted for development in China is to deliver benefits to rural households. The results of this targeting, however, range from being effective to counter-productive. Targeted industry development was described in the previous section as a process of *first* expanding output in the industry, and *second* in increasing the importance of higher-value segments. The following discussion investigates the positive and negative effects of industry targeting measures on diversified and specialised households.

The *first phase* of industry targeting — industry expansion — can have a positive impact on rural households. Even if not accompanied by an increase in value, industry expansion can create new opportunities and options for both types of rural households. For example, it can provide an additional activity to the suite of potential activities diversified households can draw upon to mitigate market and production risks, and integrate within their farming systems.

For diversified households considering becoming involved in the industry in a small way, entry costs into the industry are usually low and often subsidised. Furthermore, provided that diversified, semi-subsistence households remain partly 'insulated' from market forces, involvement in the industry is a low-risk decision. Industry expansion without increases in value, however, is not attractive to specialised producers of the commodity. On the other hand, it does give rural households opportunities to specialise in related off-farm agribusiness activities, including trading and processing for low-value markets.

The *second phase* of industry development — efforts to move to higher-value market segments —

²² This was accelerated by the pressure on domestic fine wool prices brought about by the depressed international wool prices of the 1990s.

can also bring benefits to specialised households. For instance, it generates the infrastructure (cold rooms, transport, mechanisation, centralisation, branding, etc.) that is a prerequisite to entering higher-value markets. Higher farm gate prices for better quality produce can generate revenues that may offset the additional costs of meeting the requirements of these higher-value market segments. Furthermore, an increase in industry value may encourage more diversified households to become specialised households with the potential for increasing incomes.

There are circumstances, however, under which targeted industry development can be detrimental to both household categories. Consider first industry expansion. Rapid industry expansion as a result of targeting may ultimately lead to market corrections and industry rationalisation. Because price signals may not be transferred clearly (as in the case of semi-subsistence households), because of official pressure to stay in the industry, or because of a lack of alternative opportunities, many households not suited to the industry may remain in it. Over-crowding and over-production, particularly in low-value markets, places downward pressure on prices that can become entrenched. In these cases, rural households can be caught in a position of chronic low returns and so bear the costs of industry rationalisation even though the forces behind the rationalisation were beyond their control.

Market price corrections will affect specialised households most, as they are more exposed to changing market conditions and have more household assets tied-up in specific activities. However, as China's commercialisation drive continues, it can be expected that diversified households will also come under much greater pressure from changing market conditions.

The second phase of industry targeting — increases in industry value — may also fail to contribute to all rural household incomes for two main reasons. *First*, industry development at this level requires differentiating between higher- and lower-quality products, and the implementation of grading or product description systems that enable the identification or sorting of product of different qualities. Segmentation reduces the incidence of price averaging, where prices received are for a mixed grade that does not accurately reflect the quality of the product. The effect of these more accurate price discovery mechanisms is to increase prices received by producers that can meet the standards (most likely to be specialised house-

holds) and decrease prices for producers that can not (most likely to be diversified households). Depending on cost structures and quality-price differentials, this may exacerbate the income gap between different households.

Second, efforts to increase the relative importance of premium market segments may be irrelevant to diversified households and can have an ambiguous effect on specialised households. For example, the premium-value market segments for both beef and fine wool are dominated by large vertically-integrated, agro-industrialised enterprises and systems.²³ Specialised households may play a role in these higher-value markets but only by integrating with the agro-industrialised systems, and only in a passive role through contractual arrangements. Although a major aim of the vertical integration model is to modernise rural industries and increase efficiency, many officials believe that it can also contribute to rural household incomes. Realisation of these benefits, however, is reliant on solving a series of problems with the agro-industrialisation model in the Chinese context (see Niu 2002; Waldron *et al.* 2003).

Several conclusions can be drawn from the analysis above. *First*, some aspects of China's 'targeting' approach to the expansion of rural industries may have been beneficial to rural households, especially in the initial years. The dilemma, however, is that China's great strength in this regard can also be its major weakness. The targeting of rural industries can become detrimental to rural households as markets become overcrowded and prices depressed. This may have the most serious effects on commercialised specialised households that have the potential to contribute most to balancing income gaps between rural and urban areas. Furthermore, with the continuation of China's market reform process, diversified households will also feel more directly the negative impacts of industry targeting.

Second, industry development measures targeted to increase industry value have been aimed more at boosting technical capabilities to service higher-value markets rather than to develop and promote these markets and, most importantly, secure access to them. For instance, numerous government initiated or supported investments in cattle slaughter

²³ Large agro-industrialised systems dominate the high-value market segment because they may hold a comparative advantage in this segment, but also because they receive favourable treatment to occupy this position.

facilities or premium feedlots designed to access lucrative export and premium domestic market segments have failed, not through a lack of technical know-how but through an inability to secure these markets. Access to premium markets is presumed at the start of these projects and many of the projects, while handling the technical difficulties well, lack the skills to access higher-value markets once production comes on-stream. Developing technical capabilities to meet these premium markets can be challenging, but has proved nowhere near as problematic as commanding the marketing skills to access the premium market necessary to make the enterprise economically viable.

The failure to secure access to premium markets has nullified some of the benefits that could accrue to specialised households, in particular, who have the most to gain from an increase in industry value and the most to lose from overcrowded production conditions. Nevertheless, there is considerable scope for the growth of higher-value markets in China as the size of China's middle class increases and as lucrative overseas markets open for China's rural industries. This is especially true for mid-value beef and mutton markets where urban consumers are prepared to pay premiums for 'safe' meat — disease free product produced under hygienic slaughter and distribution systems (see Cai *et al.* 1999; Longworth *et al.* 2001; Brown *et al.* 2002). Wool processing mills in China are also prepared to pay for better quality wools as they shift from more generic orders to more exacting end-user requirements. Specialised households have the capacity to meet the demands of these mid-value markets, especially if organised in local groups, but require access to, and the support of, market and industry systems. Efforts to develop these systems and an analysis of their effectiveness are taken up in the following section.

5. Facilitating and supporting policies needed to sustain industry development

Experiences with many rural industries in China, including beef and wool as discussed above, suggest that the traditional interventionist/targeted approach to industry development has not led to broadly-based *sustainable* increases in rural livelihoods. Furthermore, given the macro-development of China's accession to WTO and the potential gradual opening of the rural sector to international competition, future policy approaches will need to

become increasingly market-oriented and more market conforming.

Indeed, a major argument advanced in this paper is that future policies designed to increase rural incomes should be aimed at facilitating the access of rural households to mid-value markets. Such policies are likely to benefit specialised households in particular, which gain from this type of market-oriented industry development. However, the developments may also benefit diversified households that are able to 'mobilise' up to become specialised households and access these mid-value markets in a number of ruminant livestock industries.

The process of market segmentation and market-oriented reform, however, will not benefit diversified households that cannot make the transition to specialised households and which lose from the market reform and industry development process. In addition, in many poor and remote areas of China that cannot access mid-value markets or market support systems, the risks of moving to specialised production are excessive. That is, the process of specialisation may not only be difficult but, in some cases, also inappropriate. Thus, a separate set of policies is required to support the welfare of these diversified households and systems.

These issues are approached by first outlining the policies settings that will benefit specialised households (and the diversified households that can mobilise to become specialised households), and then the policies that can support diversified households for whom the transformation to specialised households is unattainable or undesirable.

5.1 Strengthening marketing and agribusiness

Of most benefit to specialised households is the encouragement of a strong agribusiness sector that can link them to the full range of marketing opportunities for their products. Recently Chinese policy-makers — in the traditional 'top-down' interventionist/targeting policy mode — have begun to place enormous emphasis on vertical integration and agro-industrialisation as a means of modernising marketing chains in the rural sector. Whilst this approach may have some merits under certain circumstances (e.g. in relation to fine wool as discussed earlier), it is fundamentally flawed as a means of achieving a general improvement in rural welfare.

Only a small proportion of specialised households are likely to benefit, since agro-industrialised marketing chains aim to serve the small, higher-value end of the available markets. The remainder of the specialised households and the great bulk of diversified households will become 'losers' under this industry development model, as has been the case in Western countries and even in many Asian countries where this approach to modernising livestock industries has been adopted. Clearly, this approach to industry development is not compatible with a broadly-based improvement in livelihoods of rural household in China.

China needs to encourage the strengthening and upgrading of the already extremely disaggregated agribusiness sector. Policies are needed that facilitate the strengthening of a range of different and competing marketing chains serving the various segments of the available markets.

Whilst there are numerous specific policy initiatives that could be considered that would facilitate and enhance agribusiness and marketing efficiency, two especially important areas in which policy initiatives could make an enormous difference in China are information systems and registration processes. Well-established systems and processes in these areas underpin market-oriented agribusiness activities in developed economies.

Information systems in the context of market development include, among other things, product grading systems, accreditation schemes and price or market information reporting schemes. These systems and schemes often affect markets in general, but their application can be industry specific. The types of schemes that have emerged in the case of beef are detailed in Waldron *et al.* (2003, Chapter 11) and for wool in Longworth and Brown (1995, Chapters 4 to 6). In both the beef and the wool industries, and in other ruminant livestock industries such as mutton, information systems are undeveloped or under-utilised, especially in relation to mid-value markets.

The development and implementation of information systems as described above may not be suited to the fragmented and low-value production and marketing systems that characterise China's ruminant livestock industries. However, as the number and sophistication of transactions increases, and as efforts are made to move beyond localised low-value markets to mid- and higher-value market segments, information systems become increasingly necessary to improve industry integration and efficiency, and reduce transaction costs. Sev-

eral impacts of these information systems are worthy of note.

First, various aspects of the information systems described above allow for more distinct separation of products of different quality, reduce the incidence of price averaging, and improve pricing accuracy. For the reasons outlined in Section 4, this is most likely to benefit specialised households over diversified households. *Second*, the increased consumer confidence that comes from accreditation for quality, hygiene and grading can expand higher-value markets and so product price premiums. *Third*, objective measurement facilitates trading over long distances (in space and time), where buyers and sellers do not have personal relations, by reducing transaction costs and uncertainty. This is especially important with higher-value markets which extend beyond local mass markets (Brown *et al.* 2002). *Fourth*, price information systems facilitate price discovery by enabling sellers (specialised households) to be aware of opportunities in distant markets, as well as improving the arbitrage activities of traders. *Fifth*, more detailed information can improve equity in trading, both through improved contract enforcement capability and by reducing information asymmetries. *Sixth*, the public availability of these systems enables more robust industry participation from specialised households. In the absence of these systems, many industry activities would be internalised within large and vertically integrated enterprise systems. These include branding as a form of *de facto* specification for consumers, exchange between industry links, and control of many production nodes.

Another form of market support system most likely to benefit specialised households involves **registration procedures**. These relate not just to registration of the specialised households themselves but also to other bodies. *First*, registration is required of a range of groups in China (enterprises and associations, for example) but has not been extended widely to specialised households. Households could benefit from registration because 'legal person' status can help when entering into legally binding contracts and when applying for credit. In some areas, resistance to registration comes from households themselves in wanting to avoid the related fees as well as scrutiny for tax purposes and bureaucratic processes. Thus increasing registration among households requires that fears be allayed about being at a relative disadvantage to unregistered households or that the benefits of registration outweigh any direct and implicit costs of the registration.

A *second* form of registration that would seem desirable is the registration of traders in the areas in which they purchase.²⁴ Registration may reduce some of the irregular trading practices and enable local sellers to at least know who they are dealing with and how to find them in case of a dispute. A *third* type of registration of potential benefit to specialised households relates to co-operatives. At present, there is no Co-operative Law in China. Co-operatives cannot be formally registered, and thus there are associated problems of legal status, access to credit and ability to enter into contracts. Thus, households — and especially specialised households most likely to benefit from group structures — are constrained in their ability to enter into co-operatives or independent group structures.

The market support measures associated with information and registration discussed above will be of more benefit to specialised households relative to diversified households and to agro-industrial enterprises. Furthermore, these measures or systems may expedite the transition of diversified households to become more specialised. Many of the measures, however, will be irrelevant or detrimental to diversified households that cannot make the transition. Indeed, they could be expected to increase the economic gap between wealthier specialised households and poorer diversified households.

5.2 Non-market support systems

The market-oriented ‘specialisation’ strategy of development proposed above applies to households and areas with favourable circumstances in relation to natural resource endowments, access to higher-value markets, political relationships, local leadership capacity, and cognitive ability of the households themselves. This includes many areas of China such as the agricultural areas of Central and Northeast China. However, it precludes many other areas such as the pastoral and mountainous areas of Northwest and Southwest China where economic options are often limited to ruminant livestock and where it is neither possible nor desirable to enter into specialised systems.

Success in specialised production is dependent on accessing distant higher-value markets. Many poor remote areas lack the necessary agribusiness link-

ages to these markets. That is, they do not have the infrastructure, resources (including human) and institutions (including certification and standards) to access these markets, or to negotiate higher prices with intermediaries that access them. In the case of the beef industry, these markets are very limited and in the wool industry, prices are very sensitive to imports and alternative fibres. In addition, specialised production requires access to quality inputs (such as feed) that are vulnerable to weather and market conditions. That is, in adverse and uncertain conditions, specialisation may prove disastrous for regions and households that have limited alternative options and limited ability to cope with changing conditions. As discussed in Section 2, specialisation can be a relatively high-risk strategy if poverty alleviation is the objective.

Thus policies also need to be developed that address the relative and absolute income needs of diversified households. Two major types of ‘support’ policies are important to diversified households in particular — the extension system and the orientation of poverty alleviation programs. Once again, while these systems and programs are general in nature, they are often applied through livestock industries.

China’s livestock sector is served by a massive *extension system* that in 1999 comprised 56 000 stations and 1.1 million staff involved in veterinary services, feedstuff advice and breeding programs. The highly subsidised system has generally been successful in servicing the ‘basic needs’ of farmers and the dissemination of new technologies, breeds and programs.

This system, inherited from the Central Planning era, is now under enormous pressure to reform for a number of reasons. *First*, the State and the extension system is under severe budgetary pressure, reflected in resources, personnel and services at the grassroots level (Kulander and Delman, unpublished). *Second*, the extension system is used as a tool of industry policy and extension is still largely a mandatory and ‘top-down’ affair (Delman 1992; Huo and Ling 2000). *Third*, the existing system is oriented toward disseminating ‘generic’ technology and inputs rather than satisfying the specific needs of households that aim to produce for higher-value markets.

Currently, the publicly available extension services do not adequately meet the needs of specialised households, partly because of the pressures on extension services mentioned above. Consequently, specialised households are becoming more reliant

²⁴ This is especially the case for traders that come from other areas to purchase livestock, as well as the sale of livestock and livestock products in remote pastoral and mountainous areas.

on agro-industrial enterprises for inputs and technology. Reforms that partly deregulate the State-run extension system — either by allowing other non-State players into the sector or for the State system to offer services on a user-pays basis, even if still partly subsidised — may provide specialised households with an extension service better suited to their needs.

At the same time, however, subsidies should be maintained for the provision of generic extension services to diversified households. That is, generic or undifferentiated extension services should be seen as a public good, not only to help poorer households in rural China to access low-cost and effective services, but also to achieve other societal goals such as reducing the risk of epidemics or disseminating strategically or environmentally useful technology. That is, a ‘two-tier’ extension system may better meet the needs of both specialised and diversified households and allow households to choose the appropriate system for them. There is some evidence that such a system is already under development.²⁵

Another policy arena of relevance to the welfare of rural households, and diversified households in particular, is *poverty alleviation*. Although it is widely acknowledged that China has made giant strides in this regard, 100 million people still make less than US\$1 per day (World Bank 2000). China’s approach to poverty alleviation has undergone significant change in the post-1978 reform era. In the 1980s and the first half of the 1990s, poverty was addressed by the ‘basic needs’ approach that continues to be run by the Ministry of Civil Affairs. By the late 1990s, however, this approach had been displaced by what could be described as a ‘pro-growth’ approach to tackling poverty. Pro-growth measures have been aimed at increasing regional growth, stimulating the growth of agricultural activities, as well as the development of agricultural specialisation and agro-industry. These were initially aimed at agricultural systems, but by 1998 had also begun to focus on agro-industrial programs and enterprises (Rozelle *et al.* 1998).

Although poverty alleviation programs are general in nature, they are often expressed through rural industries, including ruminant livestock industries.

²⁵ For example, in Fuyang, households entered into contracts with the AI station which provided breeding services. The household could choose the sire (held at the bull station), but the service costs more than the standard AI service where the household had no choice of sire.

This is partly because the State Council Poverty Alleviation Office lies within the Ministry of Agriculture and partly because development options in poverty-stricken areas are often limited to livestock industries.²⁶ There are many examples of poverty alleviation funds being channelled through ruminant livestock industries. In line with broader trends, poverty alleviation funds have been used to stimulate industry expansion (especially through the provision of inputs), to promote agro-industry and to encourage household specialisation. Many poverty alleviation programs direct funds to larger households that are perceived to be more viable and that can act as a model or demonstration to smaller-scale, poorer households. Yet the scale of these demonstration households is so different from that of poor households that they are of little relevance to the latter in improving their livelihoods.

In principle, poverty alleviation schemes should be targeted more directly at poor households. In the context of this paper, they should seek to support diversified households that have not benefited, or are likely to lose, from market-oriented industry development. Types of poverty alleviation schemes that do target poorer and diversified households more directly can be identified and include micro-credit programs involving livestock. Some of these schemes are evaluated in more detail in Waldron *et al.* (2003, Chapter 12). The extension of these programs, compared with the more indirect programs targeted at larger households, would appear to be a sounder use of scarce poverty alleviation funds.

6. Conclusions

With the failure of broader macro-policies to address rural development and the livelihoods of rural households in China, especially in the less-developed Western regions, the emphasis given to promoting rural and regional development through industry development and industry policy is understandable. However, this paper highlights some of the problems encountered with the traditional ‘top-down’ interventionist approach to industry policy

²⁶ For example, households below the poverty line in Yunnan derived 80% of their income from livestock (Yunnan AHB, personal communication). In Sichuan, the equivalent figures were estimated at 90% in pastoral areas and 50% in agricultural areas (Sichuan Poverty Alleviation Office, personal communication). In a poverty-declared pastoral county in the north of Hebei Province, 70% of households below the poverty line rely on livestock production to overcome poverty (Weicheng AHB, personal communication).

in China, especially in relation to ruminant livestock industries.

The paper argues that to sustain industry development and maximise its benefits, a 'second round' of industry policies — that are more facilitative than interventionist — is needed to encourage agribusiness activities that link a broader range of households to mid- and high-value markets.

Another important aspect of industry policies designed to improve the livelihoods of rural households is that their impact is highly likely to vary as between different broad types of households. Provided they are carefully designed and well implemented, industry policies have the potential to increase the incomes of specialised households and reduce the urban-rural income differential. But not all households can take advantage of these policies. Indeed some industry development policies may adversely, albeit inadvertently, affect the very households whose livelihoods are most at risk. Addressing their needs requires policies that target more directly the livelihood of poor households. That is, a two-tiered policy approach that recognises the differences between different types of rural households and activities is required to bring about sustained improvements in rural livelihoods.

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