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Models of Agro-industrialisation in China: the Case of the Cattle and Beef Industry¹

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Abstract: *The term translated literally as ‘agro-industrialisation’ is used both frequently and loosely by Chinese officials and academics to refer to a range of targets including agricultural integration and commercialisation. Support for the agro-industrialisation process has shifted agricultural policy to the extent that it now heralds the third wave of reform of the Chinese rural economy since 1978. This paper draws on a literature review of Chinese material and on extensive fieldwork material to discuss: a) what is meant by agro-industrialisation; b) how agro-industrialisation measures are organised and implemented; c) how this reflects the characteristics of Chinese agricultural and political-economy systems, and; d) the role of and implications for various actors (government, enterprises, rural households and co-operatives in particular). Discussion places particular emphasis on the Chinese cattle and beef industry.*

The Chinese rural economy has undergone three major reforms since 1978. The first was the introduction of the Household Responsibility System³ that became widespread throughout China at the beginning of the 1980's. The second was the proliferation of Town and Village Enterprises (TVEs, *xiangzhen qiye*) throughout the 1980's. Since 1995, the concept of ‘agro-industrialisation’ (*nongye chanyehua*)⁴ has been heralded as the third major reform ‘tidal wave’ (*langchao*) of the Chinese rural economy⁵ (Yang 1997, 4). The term ‘agro-industrialisation’ has almost become a slogan in China, encompassing the criteria outlined below (section 1.1), similar to but wider in scope than the ‘Western’ notion of agribusiness reform.

To further place agro-industrialisation measures in context, the 9th National People's Congress of the PRC, held in the first half of 1998, re-iterated the importance of State-owned Enterprise (SOE, *guoyou qiye*) reform, demarcating of the administrative and management functions of government bodies and development of the agricultural sector, partly as a means of equalising comparative wealth between city and rural regions. All of these would appear to have important implications for China's agro-industrialisation process though, as outlined in this paper, the impact on the Chinese cattle and beef industry has not, in many respects, been strong or direct⁶.

This paper aims to outline the views of Chinese officials and academics on what agro-industrialisation actually means and how the development strategy should be implemented to affect organisation of the Chinese agriculture sector. Analysis is based on an extensive Chinese-language literature review of the

¹ Paper presented to the 43rd Annual Conference of the Australian Agricultural and Resource Economics Society held in Christchurch, New Zealand, 19-21 January 1999. Copyright Scott A Waldron 1999. This paper was first written in Chinese as a thesis in 1998 at the Nanjing University-Johns Hopkins University Centre, Nanjing in partial fulfilment of graduation criteria. The author would like to thank to Prof. Chen Chuanming for supervision efforts, Wang Xin for language edits of the original paper, and Colin Brown and John Longworth for comments and editing of this revised English version. The paper draws upon research from Australian Centre for International Agricultural Research (ACIAR) and Meat and Livestock Australia (MLA) funded projects on an analysis of socio-economic and agribusiness developments in the Chinese cattle and beef industries. The projects involve collaboration between The University of Queensland, the Institute of Agricultural Economics within the Chinese Academy of Agricultural Sciences, the Rural Development Institute within the Chinese Academy of Social Sciences, and the Department of International Co-operation within the Chinese Ministry of Agriculture. The author would like to thank the other collaborating scientists on the research projects and to ACIAR and MLA for their funding support. Further details of the research projects can be found at <http://www.nrsm.uq.edu.au/Nrsm/Research/ChinaP.htm>.

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³ The full translation of the system is ‘family contract responsibility system’ (*jiating lianchan chengbao zerenzhi*)

⁴ Chinese terms are sometimes translated literally in this paper, and followed by the standard *pinyin* form of the term. This is done to give readers an understanding of the way ideas are expressed in China and also to avoid the loss of meaning in translations.

⁵ Watson (1994) overviews other reform measures including market deregulation and liberalisation of ownership and leasing regulations. See also Longworth and Brown (1995) also look at market and agribusiness reforms in the wool industry.

⁶ The internationalisation (*guojihua*) of Chinese agriculture, in terms of foreign investment, trade and technology transfer and in light of China's impending entry into the World Trade Organisation, is also relevant.

subject and on extensive interview material⁷. Parts of the paper also relate the nature of the agro-industrialisation policy to English-language literature on agribusiness reform, development policy, political economy and enterprise reform, although this English-language ‘review’ is far from complete. A broad analysis of transaction costs is particularly relevant to the debate. To help define and provide an insight into the mechanics of the agro-industrialisation process in China, the cattle and beef industry is used as a case study. A broad assessment of strategic options are outlined. These tend to be descriptive in nature although some prescriptive analysis is included in the concluding remarks.

The first section of this paper seeks to overview the principles of agro-industrialisation as outlined in Chinese literature on the subject. The second section outlines characteristics of the Chinese cattle and beef industry that affect agro-industrialisation of this industry in particular. In these two sections, comments are made that relate to the nature of the development policy and the political economy of the Chinese cattle and beef industry. The third section of the paper outlines a number of different models by which the cattle and beef industry is and can be agro-industrialised. A broad distinction is made between ‘top-down’ (*zishang erxia*)⁸ models of organisation, where large enterprises⁹, ‘encouraged’ (*zhichi*) by government, lead the agro-industrialisation process. This is contrasted with ‘bottom-up’ (*zixia ershang*) models, where rural households and co-operatives directly participate in not only the production chain but also in the processing and the marketing chains. There is a distinct bias in China toward the former ‘top-down’ model of agro-industrialisation. A number of Chinese academics and officials have, however, also stressed the need for China to further develop ‘bottom-up’ forms of rural organisation and cite the experience of some Western countries to support their arguments. Fundamental questions exist about who should lead (*daidong*) the agro-industrialisation process and who should act as the ‘central links’ (*zhongjie*) in the marketing chain for agricultural produce. A central theme, not often explicitly discussed in Chinese literature, relates to appropriate scales (and also scopes) of development in the Chinese context.

1. Agro-industrialisation

The term ‘agro-industrialisation’ has become an often-used yet largely ill-defined buzzword in recent years¹⁰. Indeed, the term is used so often and so vaguely that literally hundreds of academics, officials and

⁷ **Research methodology notes.** The literature review undertaken for this paper is extensive but not comprehensive. A vast body of Chinese-language literature exists on agro-industrialisation, much of which is very general in nature. Articles published from 1995 in four major journals and deemed most useful to discussion of the subject are referenced in this paper. Many books on agro-industrialisation have also been published. Several references to these appear in the bibliography but, due to time constraints, have generally not been used in the writing of this paper. Literature on company management (both Western and Chinese) in particular was previewed by the author in Chinese articles and in coursework in Chinese. A full reading of the original articles is required. Officials and academics in China hold a wide range of opinions on the subject of agro-industrialisation. While most are proponents of the development strategy in principle, some are sceptical, and are more willing to express this in interviews than through publication. The ACIAR and MLA projects mentioned above have, to date, allowed the author to undertake more than six full months of fieldwork in China, involving interviews and surveys to be conducted with officials, academics, farmers and business people at the full range of administrative levels in nine different provinces and in Beijing. Many cattle and beef industry-specific comments made in this paper, many of which are anecdotal in nature, are derived from this fieldwork. Due to space restrictions, analysis in this paper is made on a nation-wide level and generalisations are made about the way regions approach the issue under discussion. There are of course vast inter-regional differences in China. The ACIAR and MLA projects have enabled project members to collect a great deal of information on the different strategies of different regions in different production systems. Much of this will be published in a book on the regional variation in the industry. Similarly, this paper provides few details on government structures, either that relating to different ministries and bodies (‘horizontal structures’) or across administrative levels (‘vertical structures’ from central and provincial levels down to the natural village level). Again, collected information will be used in more focused forthcoming publications. Finally, survey, market and other data collected in the projects is also used sparingly in this paper, which is more conceptual in nature.

⁸ The terms ‘top-down’ and bottom-up’ (models of agro-industrialisation) do not appear in the literature on agro-industrialisation. They were recommended for use in this paper by a Chinese political scientist.

⁹ The term ‘enterprise’ (*qiye*) is mainly used in this paper interchangeably with ‘company’ (*gongsi*) or uses terms translated directly from Chinese references. The term ‘*jituan*’ is translated as ‘conglomerate’ or ‘group’ and comprise of a number of subsidiary companies (*zigongsi*). A number of *jituan* are active in the cattle and beef industries. Amongst the national level *jituans* are: (parent companies of General Food Companies (General Food Groups), the China National Oils and Foodstuffs Import / Export Corporation (COFCO), the China Animal Husbandry Group (*zhongmu jituan*). A number of regional (province-level) *jituan* are also active.

¹⁰ Zhang (1996, 2) dates the beginning of agro-industrialisation to the end of the 1970’s when, following the Yugoslavian model, industrial / commercial enterprises entered into agricultural sectors. Throughout the 1980’s some models of TVEs began their development processes through the processing of agricultural products. According to one interviewee, the path to institutionalisation of the concept of agro-industrialisation had its genesis in Shandong Province. A regional official tried some value-adding activities and coined the term. The provincial governor liked the idea and discussed it with a high-ranking State Councillor in charge of

reporters have contributed to a massive body of literature seeking to define what it actually means¹¹. The following is an overview of the most commonly stated objectives (*mubiao*) and principles (*yuanze*) of agro-industrialisation raised in this body of literature. While some of these might seem obvious, they are constantly emphasised in the literature, mainly because large-scale and systematic change is entailed.

1.1 Objectives and principles of agro-industrialisation.

- a) **To help rural households (*nonghu*) link (*lianjie*) with the market.** While rural households have, for two decades under the Household Responsibility System, had considerable scope to respond to market conditions, most still operate in what is called a 'traditional' (*chuantong*, implying traits of central planning) or 'natural' (*ziran*, implying subsistence-type agriculture) rural system. Some writers generalise that under this system, households do not understand the needs of modern agricultural markets and still face (*miandui*) the twin problems of *mainan* and *mainan* (difficult to sell and difficult to buy).
- b) **Rural household + company (*nonghu* + *gongsi*).** This 'equation' has also become very popular and used in a multitude of newspaper articles and publications on agro-industrialisation. It essentially means that a 'patrimonial' relationship is formed where households produce raw materials for companies that use their scale and networks to perform processing and / or marketing functions. This form of co-operation is widely thought by writers to be a solution to the situation outlined in a) above.
- c) **To develop consumer-orientation.** This objective is self-explanatory yet also difficult to implement in China, particularly given a lack of information (including consumer surveys) and largely undifferentiated agricultural produce markets. Lin (1997, 204) sees the development of a consumer orientated meat sector as a two-fold task: firstly to produce the type of product consumer want (in terms of freshness, texture, taste and, in particular, hygienic meat) and, secondly; in less obvious aspects (service, packaging etc.).
- d) **Vertical integration (*chuzhi xietiao*).** Vertical integration is a fundamental aspect of agro-industrialisation and, indeed, the two terms are sometimes used synonymously¹². Vertical integration obviously involves linking sectors in the pre-production, production and marketing chains (this is often referred to in China as the 'length of the dragon' (*yitiaolong*)). In the meat sector, cattle production, slaughter, beef and by-product processing, storage and cold storage, transport, distribution, wholesaling and retailing sectors are obviously involved. Amongst the common means of integrating industries include: i) the provision of information; ii) the development of recognised standards; iii) the development of effective cross-sector relationships and contracts, and; iv) the establishment of vertically integrated enterprises. With regard to these factors, (i) there is a distinct lack of accurate publicly available commercial information available to producers in China¹³. In the cattle and beef industry, no recognised industry-wide national standards exist (ii above). Finally, (iii) fixed supply contracts are rarely used (purchasers usually cite the need to maintain flexibility as a reason). In these highly imperfect market conditions, the theories of Williamson (1979) and Coase (1937) on transaction costs, suggest that enterprises have a strong incentive to internalise market sectors within the enterprise structure. This seems to hold true in the cattle and beef industry. As outlined below, 'dragon head enterprises' (*longtou qiye*) and 'comprehensive development projects' (*zonghe kaifa xiangmu*) play key roles in developing industries.

agriculture (Chen Junsheng). The concept of agro-industrialisation was attractive to leaders of the agricultural sector looking for a new policy emphasis in the 9th Five Year Plan that came into effect in 1996. A Leading Group on Agro-industrialisation was established within the Ministry of Agriculture. In July 1998 reform measures, it was 'promoted' to the bureau status, interestingly, in the same administrative structure as the recently promoted Bureau of Rural Co-operative Systems and Management.

¹¹ A number of articles begin discussion of the subject by asking "what in fact is agro-industrialisation?" ("*nongye chanyehua daodi shi shenme?*"). That is, most Chinese (not to mention foreign) agricultural economists and policy-makers are not exactly sure what the term 'agro-industrialisation' means.

¹² Government bodies at the central level for example translate '*nongye chanyehua*' as 'vertical integration' rather than 'agro-industrialisation'.

¹³ Some writers say that this is because it is difficult to get information to multitudes of small, scattered farmers (*nongmin*). The term *nongmin* is usually translated as 'peasant' but is not used here because of the negative connotations in Western countries. The term 'farmer' or 'rural household' is used instead.

- e) **Specialisation (*zhuan yehua*)**. This is seen by many authors as an important part of the agro-industrialisation reform process. This relates to both specialisation on an industry-wide level and on actors in the production and marketing chain. Specialised households (*zhuan yehu*), specialised co-operatives (*zhuan ye hezuoshe*) and specialised towns and villages (*zhuan ye xiangzhen*) concentrate on particular industries, as opposed to groups of non-specialised households (*feizhuan yehu*) in the 'natural' economy that are involved in the production of a more diversified range of produce. The demands of more agro-industrialised livestock industries, together with land reform measures (where farmers in some regions can effectively contract household plots to other households), have led to an increase in specialisation in the pig and chicken industries (see Brown and Chen, 1999). It is clear, however, that the vast majority production units in the Chinese livestock sector are unspecialised (see 1.2 below). Again, companies have an important role in bringing about greater levels of specialisation.
- f) **Increases in the scale of production (*guimohua*)**. This is emphasised almost as a pre-condition of agro-industrialisation. The ingrained bias toward 'big is better' is evident in most articles and opinions on the subject. This is partly a reaction to an agricultural structure borne out of de-collectivisation policies and the introduction of the Household Responsibility System at the end of the 1970's¹⁴. Agricultural production is now dominated by multitudes (*qianjia wanhu*) of small-scale (*xiaogui mo*), scattered (*fensan*) households. The problems of diseconomies of scale are highlighted by many scholars of the Chinese rural economy (Muldavin, 1996). In the grain sector, problems include difficulties in mechanising¹⁵ production on 'noodle-strip plots'. In the livestock sector, unspecialised households have lower incentives to engage in 'advanced' (*xianjin*) technical and management practices (feeding, disease and parasite treatment and breeding and turnoff regimes)¹⁶. Some academics (Li, China Agricultural University, personal communication, 1998) suggest that households within a 'natural group' (region such as a village, township or town, particularly those that are specialised) can be seen to constitute a single production unit (herd or slaughter / distribution unit for example). This concept has various implications. First, this can be effectively utilised by households themselves if they are organised according to various 'bottom-up' models discussed in Section 3.5. Under the 'company + household' model, companies effectively organise and provide (cattle) markets for this 'natural' group of households or herd. Alternatively (or in conjunction), companies can increase scale levels by completely replacing this group through company production (feedlots and abattoirs for example). Market issues and transactions costs (discussed in Section 2.2) are obviously important determinants. In the wider economy, policies and funding measures are aimed at increasing the scale of companies. Companies are encouraged to amalgamate (*jianbing*), subsidies will be continued to large and strategically important SOEs (of which there are about 3,000) and discontinued to smaller SOE's and a decree has been put in place to 'grasp the large and release the small' (*zhuada fangxiao*).
- g) **Value-adding**. This 'indicator' has two components. First, the ability of producers to target higher-value markets. As elaborated in Section 2, households generally produce cattle and beef for low value markets, although improved and intensively fed cattle command a small per kilogram premium. Small high-value markets are dominated by a small number of large integrated feedlot-abattoir facilities. The second component of value-adding relates to further processing. Chinese policy-makers constantly emphasise the need to process by-products in all industries. In the cattle and beef industry, further processing relates to the meat processing, bone processing, offal, hide and leather garment sectors and

¹⁴ Centralisation of economic structures into corporate structures have also been facilitated by regulations made for public good/welfare reasons. Small-scale paper producers and tanneries are, for example, being directed to amalgamate or close down for environmental reasons. There are plans to ban household slaughtering to improve meat hygiene levels. This is an indication that relevant government agencies do not have the administrative capacity to cover many small scattered units. It also re-iterates commonly-held opinions that associate small, private units with 'shoddy' practices. On a separate note, state-owned meat stores, abattoirs and distributors emphasise and indeed advertise their ownership status because that entails quality control, scale and distances the company from consumer and customer distrust of small, private companies.

¹⁵ Agricultural mechanisation is an important issue in the cattle industry. Some officials say that tractors are replacing cattle for the ploughing of land and transport of materials. This has had some effect, though probably not too large, on the primary use of cattle for beef rather than draught purposes and on increasing levels of specialisation.

¹⁶ Many officials and writers tacitly or openly assert that household producers do not have the cultural levels (*wenhua shuiping*) and that local government does not have the administrative capacity (*xingzheng nengli*) to engage in quality control or employ and extend advanced techniques (*xianjin jishu*) at the household level.

the production of a range of medicinal products from glands. These sectors are dominated by companies of various types (shareholder companies, SOEs, TVE's and some collectives¹⁷). Combined, the value of these industries are perhaps as high as the beef industry¹⁸.

- h) **Principle of mutual benefit.** A number of writers make the obvious point that all participants in the production and marketing chains must benefit from that participation or the chain will break down – supplies will be provided unsatisfactorily or not at all.
- i) **Development of the rural economy.** This indicator has two components. First, the ability of agro-industrialisation measures to increase the value of production (*chanzhi*) in rural areas. Second, the effect that this will have on the living conditions (*shenghuo shuiping*) of rural households / farmers. While there is a general consensus amongst writers that agro-industrialisation will be of net benefit to rural regions, many have raised concerns about whether the leaders of the agro-industrialisation process – government and enterprises – will create employment opportunities for the surplus rural labour force and about under what arrangements revenue from agro-industrialisation will be distributed in rural areas. These questions remain largely unanswered.
- j) **Capital formation.** On an associated issue, capital shortage is seen as the major restraint to the realisation of agro-industrialisation aims (Hunan Province Branch of the China Agricultural Bank, Gu, 1995). For this reason, the state is needed to fund and subsidise much of the agro-industrialisation process. Foreign investment is also in intense demand in regional China and regulations have been passed to allow foreign companies to increase the scope of business activities (Er?, 1997; Ma, Liu and Sun, 1997).

In sum, the term agro-industrialisation effectively refers to commercialisation of agricultural industries and a move away from a 'traditional' or 'natural' rural economic system. As elaborated below, enterprises – 'encouraged' by government – are widely seen as the driving force behind agro-industrialisation where households play a supporting role in the provision of raw materials. There are distinct similarities to the Western experience of agribusiness reform but differences also arise as a consequence of different economic and agriculture structures. In particular, the small scale and unspecialised nature of household production make the transition of agricultural systems a massive task, effectively requiring re-organisation of the rural economy. The means by which this is and should be done are discussed below with reference to the cattle and beef industry.

1.2 Determining the depth (*shendu*) of agro-industrialisation in China

Despite the difficulties, a number of Chinese academics have sought to compare the level of agro-industrialisation in China with developed (*fada*) countries. Wang (1996) for example estimates that "my country's degree of agro-industrialisation (*nongye chanyehua*), integration (*yitihua*), management (*jingying*) and comprehensive development (*zonghe kaifa*) is inadequate ... in developed countries the value of the food processing industry is about 80% of the value of agricultural output, whereas in my country it is only 20%".

China Agriculture Statistics Yearbook (1993-1995) show that more than 85% of pigs are raised in unspecialised households that hold less than 10 head. In the beef industry, which is at least 10 years behind the pig and poultry industries in terms of commercialisation, Ministry of Agriculture officials (personal communication) says that about only 10% of cattle are turned off through feedlots (this would seem to include large specialised fattening households). According to Barkema, Drabenstott and Welch (1991) agribusiness reforms in the U.S were complete by the beginning of the 1990's. By 1995, the majority of pigs and cattle in the U.S were turned off through feedlots or produced under contract arrangements. As indicated earlier, however, high per unit scales of production are not necessarily useful or appropriate in China.

¹⁷ A large body of literature exists in China on the structures and development processes of different types of shareholding companies and TVE's, while thousands of articles appear on the subject of SOE reform.

¹⁸ Long (1996) suggests that the value of grain and it's by products from harvest, through processing to final consumption can increase in value by 1000% with 'pure profits' (*chunli*) of more than 800%.

Lin (1997, 201) uses a framework developed by Bovee (1992) to approach the question of where China stands in its agro-industrialisation / commercialisation transition process. Bovee writes that developed countries have undergone three eras in their development planes: i) the production stage (*shengchan shidai*) (where demand for products is higher than supply which creates a sellers market); ii) the sales and marketing era (*xiaoshou shidai*) (where producers seek to convince consumers or customers to purchase their products), and; iii) the management and sales era (*yingxiao shidai*) (where supply exceeds demand which creates a buyers market and the principal of consumer sovereignty). Lin believes that the Chinese animal husbandry sector has undergone rapid development over the last 10 years so that it now spans the both production and also the sales and marketing eras. Lin also writes that in some respects, China is beginning to enter the third management and sales era, perhaps in the more developed pig and poultry sectors (this framework is referred to in 2.1 below).

1.3 Political economy aspects of agro-industrialisation

Understandably enough, China's agribusiness reform process lags that of most Western countries by many decades. Recent moves to implement agro-industrialisation reforms indicates that Chinese policy-makers are not willing to spend those decades 'catching up' in a process of 'natural evolution'. Instead, China's agro-industrialisation' push represents an industry policy, 'fast-tracking' or interventionist approach to economic development. In some respects, this is a continuation of policies common in China's modern economic history¹⁹. However, because policies are in rhetoric at least, market conforming (a point constantly stressed by officials) and involve close business-government ties and subsidised development (discussed below), development strategies probably bear closer resemblance to the industry policies of many Northeast Asian countries over recent decades (MacIntyre, 1989; Goodman, 1994; Islam, 1992; Lindblom, 1977). One possible difference (and in the case of Southeast Asia, similarity) is that government bodies invest *directly* in companies to increase revenues, in addition to boosting overall industry and economy wide development. The close relationships forged between business and government to 'fast-track' agro-industrialisation, bears resemblance to 'corporatist' models of industry and economic development²⁰. This is also referred to in this paper as a 'top-down' model of economic development.

Given the emphasis placed on the 'peasant agricultural economy' when Chinese Communist Party came to power and given the down-sizing effect that the Household Responsibility System had on agricultural production, it is somewhat ironic that a 'top-down' model of organisation is seen as central to the future development of the agricultural economy. On the other hand, China exhibits a 'top-down' polity and an SOE-led 'top-down', industrial sector. In some respects, agro-industrialisation measures seem to involve the transferral of these 'top-down' models of organisation to the agricultural sector, but influenced by the principles of 'market socialism'²¹.

While industry policy has largely been credited for rapid economic development in Northeast Asia (and indeed Southeast Asia), a vast body of literature on industry policy suggests that government does not always effectively 'pick winners' and can distort industries. This might be applicable to the development strategies of agro-industrialisation in general and the Chinese cattle and beef industries in particular.

2. The Chinese cattle and beef industries

The Chinese cattle and beef industry provides an interesting case study in industry targeting, market reform and agro-industrialisation in China, for a number of reasons. First, this industry only began developing

¹⁹ One researcher who has been working in China's animal husbandry industry over the post-revolution period describes the development strategy pursued by the cattle and beef industry as 'another Great Leap Forward'.

²⁰ The term was actually first used to describe business-government relations and forms of economic organisation in Musolini's Italy but the meaning has since been applied more widely in literature on Asian economic development. There are also similarities to Southeast Asian models of patrimonialism.

²¹ China's post-revolution history is marked by cycles where enterprises are 'released' (from centralised government control) to invigorate the economy and then 'collected' (to central control when enterprises start to become too autonomous and act out of accordance with national (or party) interests).

commercially on a significant scale in the early 1990's, well after the period when market reforms had been introduced and endorsed. Moreover, the cattle and beef industry was effectively 'kick-started' by government decrees and funding. On-going government subsidisation and direct investment resulted in phenomenal industry growth rates (particularly in the cattle and beef *production* sectors). Moreover, SOEs (General Food Companies) are undergoing reform and under pressure from more competitive abattoirs and distributors (households and modern private or joint-venture abattoirs). The case of the cattle and beef industry shows that market reform in China is far from straightforward process of government receding in its economic role, toward a situation seen in 'Western' capitalist countries. While the cattle and beef industry is, in most ways, fully deregulated and subject to open market conditions (no price controls or formal monopolies for example), the role of government is, in fact, important and not receding. Further relevant details are outlined below²².

2.1 Policy and development issues.

a) **Industry development strategies.** With regard to Lin's assessment of the stage of development the Chinese animal husbandry sector is in (1997, cited in Section 1.2 above), the cattle and beef industry would appear to lag other livestock industries. Despite the risks of over-simplification, it can be generalised that the Chinese cattle and beef industry has been concentrating on i) cattle production issues, but is now moving into ii), processing / value-adding activities, but is paying little attention to development of iii) marketing activities. Turning to the first 'stage' of development, (i) officials often suggest that government efforts (funding and subsidisation in particular) have been primarily focused on cattle production. This relates to cattle feeding and breeding in particular²³ and is designed to build a production base of raw materials (*yuanliao*) as animals are sometimes referred to in the marketing chain. In general, this production base has been developed very rapidly and effectively. The slaughter (and distribution and retailing) sectors were filled, in an unplanned way, predominantly by households and existing state-owned food companies. More recently, processing activities (ii), have been emphasised. Many cattle-intensive regions are now engaged in a headlong rush to establish companies and facilities in the slaughter, distribution, and by-product processing sectors. This has led to a proliferation of modern abattoirs, feedlots, the reform of some tanneries, and other by-product processors. Companies – most of which are share-holder companies (*gufen qiye*) – that are deemed strategically important are given the status of 'Dragon Head Enterprises'²⁴. These are often integrated in industry plans under the structure of 'Comprehensive (Beef) Development Projects', planned, subsidised and invested in by regional government (county, prefecture or provincial level in cattle-intensive regions), and usually under the administration of Animal Husbandry Bureaus. While larger companies are being established in the processing sector, resources spent on marketing activities (iii), do not seem to be prioritised. Advertising and research budgets, for example, of both government planners and also abattoirs and processing companies seem small. As elaborated below, planners and companies alike do not seem to regard the development of market niches (market positioning and product differentiation) as important. The result is, that like many industries in China, there tends to be a widespread replication of development plans, companies and products across China and, consequently, this competition tends to put severe downward pressure on prices. That is, regional development plans are implemented in a way that emphasises value-adding through further processing

²² Analysis is based on findings of the China Agricultural Economics Group, 'Report on Analysis of Agribusiness Development in the Chinese Cattle and Beef Industry' for the MLA.

²³ Development of cattle production capacity has been funded, primarily through the 'Straw for Beef' Program by funding and subsidising: extension activities; feeding practices including the subsidisation of plastic, urea and the construction of straw treatment pits and cattle housing facilities, and; by establishing a breed improvement structure including the improvement of bull stations, liquid nitrogen, semen freezing and distribution equipment, and the establishment of AI distribution centres, points and technicians. The feedlot sector has also been developing unevenly in this period. Industry 'encouragement' takes place in a number of ways. By 1997, funding under the auspices of the Straw for Beef Program (*jieganr yangniu*), had provided 207 counties throughout China (but mainly the Central Plains Beef Belt (*zhongyuan niudai*) with subsidies for three years to develop feeding and breeding infrastructure. Plans are to build the number of counties to 400 by the year 2000. Central government provides an average of Rmb1 million to each county, which is matched by a combination of prefecture and county governments (source: National Feed Office officials, personal communication, 1997).

²⁴ To emphasise the importance of 'dragon-head enterprises', Xia (1997, 53) states that Shandong – the most agro-industrialised province in China – "has already established 10220 by-product (*fuchanpin*) 'dragon head' processing enterprises of 'every type' (*gelei*) ... the production base (of these enterprises) covers an area of 3,330,000 hectares, they link with 10 million households and agro-industrialisation of one-third of the area of the province is led by these 'dragon-head enterprises'"

(rather than through the development of market niches) and vertical integration is planned to be achieved through the development of large enterprises, organised into umbrella organisations.

- b) **Funding and subsidies.** Nearly all aspects of the cattle and beef industry are subsidised directly or indirectly²⁵. Cattle production is subsidised through the Straw for Beef Program, which has direct effects on household producers and an indirect effect on cattle purchasers including state-owned abattoirs and slaughter households. Many feedlots are also subsidised (through direct investment in some cases, low utility fees, low interest rates, no tax commitments etc.). Specialised households are sometimes given certain breaks – grain quota obligations for example are waived in some areas and tax rates are low or non-existent – but are not subsidised to the extent of ‘dragon head’ feedlots in particular. Other types of loans and grants can be applied for²⁶. Dragon Head Enterprises in particular tend to be heavily subsidised. New and modern abattoirs and various by-product processors are often invested by regional government and provided with soft loans, tax breaks and subject to low land fees²⁷. That is, central or provincial government funding and, importantly, official acquiescence, provides a boon for regional government not only to administer funds from higher government levels, but also to invest directly in enterprises and development projects. Because of the lack of capital accumulation in rural areas, government plays a predominant role in funding agricultural development²⁸. Officials often stress, however, that any source is acceptable and that a diversified ownership structure is encouraged²⁹. China recently passed regulations aimed at permitting and increasing foreign investment in a wider range of agricultural sectors³⁰. Certainly, regional officials, without exception, are very keen to attract foreign capital for joint ventures in the cattle and beef industries.
- c) **Industry roles.** At a regional level, Beef Development Projects explicitly position industry actors (from households to companies, to live cattle markets and breeding stations, but not co-operatives) into hierarchies and flow charts. Funds and investment capital are allocated toward certain activities and actors, and industry goals and objectives are developed³¹. Government funds in particular and also regulations are therefore used to affect the structure of the cattle and beef industry. Obviously these

²⁵ Importantly this is in contrast with the poultry and pig industries which are said not to be subsidised (Liu, China Agricultural University, personal communication), although General Food Companies (under guidance of the Commerce Commission) do mediate in animal husbandry products through floor price structures and stockpiling. Some academics (Li, 1997) argue for re-introduction of prices controls in the beef industry.

²⁶ Some regions (counties in particular) can apply to central government for special project funds. These tend to be used for processing / value-adding activities because other funds (Straw for Beef and poverty alleviation funds) are used for cattle production aspects. One county-level official said that competition for these limited funds was intense and that allocation decisions often come down to relationships and the ability of regional government to write applications effectively. Also, in some regions, the cattle and beef industry occupies an important and sometimes dominant economic position. This has been created (from low level of relative importance in 1985 for example). Also, because of the importance, government has a high stake in ensuring that the industry performs and brings returns to the local economy. Under the ‘Spark loan’ provided by the Science and Technology Commission, 20% of new agricultural loans have to be provided to households.

²⁷ The issue of agricultural subsidisation is receiving closer attention in China, partly as a response to U.S pressure on the issue. Within the context of SOE, banking and government reform measures, state subsidisation of agriculture (both production and price controls for grain) place a large and unsustainable strain on the national budget. At the same time, many World Bank loans are also coming due for repayment. It is interesting to note that, despite these budgetary pressures, government (of various horizontal and vertical hierarchies) has continued to commit funds into enterprises, production and, possibly, to take out a new World Bank loan to fund development of the new cattle and beef industry.

²⁸ Wang and Jin (1996, 116) write that “under central planning, funding for agriculture relied on the state (*guojia*) ... following reform, the investment system (*touzi tizhi*) has undergone some change but, in terms of (the form of) capital utilisation, the state is still most important in investment and loaning activities.

²⁹ The army and the police play ownership and management roles of a number of companies in the cattle and beef industry. Although recent regulations have been made to curtail commercial the commercial activities of the police and army, these are apparently able to be circumvented through subsidiary companies (Jiang, involved in such a venture, personal communication, 1998).

³⁰ Indeed, foreign investment through multinational companies like Charoen Pokphand (*Zhengda*), Continental, Cargill, Arbor Acres etc. have provided important models for the implementation of agro-industrialisation. On a side-note, some companies active in the animal husbandry sector are large relative to companies in other industries. In 1996, the Thai company Charoen Pokphand was the largest foreign investor in China. Another feed company (The Hope Group), owned by two brothers, was also the largest domestic private company in China (Clear Thinking, 1996). The animal feed industry provides an interesting study in the agro-industrialisation process. At the 15th Congress of the CCP in September 1997, however, Jiang Zemin re-iterated that Beijing will remain cautious about expanding China’s reliance on foreign markets for grain and other foodstuffs.

³¹ These hierarchy diagrams and detailed plans were made available in many fieldwork regions, partly because project administrators were keen to attract funding for certain components of the projects.

'role allocation' methods have a lesser impact and are flexible to the needs and existence of actors that can fund their own industry participation, or if the regulations can not be enforced.

- d) **Ownership structures.** Lin (1997) writes that in the animal husbandry industries in general, "producers (rural households) are calculated as individual (or private) households (*getihu*); meat and hide processing companies and some feeding facilities are either state-owned (*guoyou*), shareholder (in which government is also usually involved, *gufen*), co-operative (usually joint venture, *hezhi*) or other ownership structures, while state-owned companies are still pre-dominant in the cold storage and distribution of meat". It can be seen that while ownership structures across sectors is mixed, the state plays a leading role in all but the cattle production (cow-calf production in particular). This summary holds true of the beef industry. Although slaughtering and distribution is done primarily by households, which are private, companies in the sector cover a range of ownership types where shareholder companies seem to be the main large enterprise model.
- e) **Public good (*gongyi*) considerations.** In considering the value of a large cattle and beef industry, non-market, public good considerations are important and, in a sense, act as the driving force behind industry strategies pursued by government. Foremost of the public good considerations is the notion that the cattle and beef industry is grain-saving. This is based on the premise that cattle can be fed to slaughter weight on a straw-based diet rather than a grain-based diet required by pigs and chickens. The cattle and beef industry is therefore often thought to ease pressure on China's grain balance and is a response to the question of 'can China feed itself?'. The so-called grain problem is central to agricultural policy-making in China. The feed sector is said by some authors to constitute the most important determinant of the ability of China to maintain a 'grain balance' (Waldron, 1998; Hu, 1997). Feeding straw to cattle, rather than burning it in the fields or processing it in inefficient paper mills, is also thought to entail significant environmental benefits, as does the replacement effect of manure with inorganic fertilisers. Finally, beef provides an alternative source of protein to other foods more traditionally eaten in the Chinese diet (doufu and pork).

2.2 Market and transaction issues.

- a) **Supply-demand balance.** With around 117 million cattle, China now has one of the largest national herds in the world³². Partly as result of industry targeting, rather than allowing market forces to dictate development patterns, the cattle and beef industries are experiencing oversupply (*guosheng*)³³ problems. As a result, many government-invested feedlots and abattoirs are over-capitalised and struggling financially. Further problems arise from replication of industry development plans across regions. Virtually every province in Central and Northeast China now has ambitious beef industry development plans, almost without consideration of comparative advantage principals on a nation-wide basis. Moreover, counties in close proximity, sometimes falling within the same prefectures, often compete with (rather than complement) each other using almost identical development strategies³⁴. In many ways, production of high quality cattle and beef pre-empts demand for the product. Indeed, because China does not have a history of high-quality beef consumption, it has to be introduced to consumers and, to do this, has to be produced in large companies. This has been exacerbated by the development of productive capacity for an undeveloped, low-value beef market serviced almost entirely by slaughter households. Policy-makers have essentially staked a great deal on domestic consumers radically changing ingrained consumer preferences (so that more and higher-value beef is consumed) and on China's success in negotiating protocols with high-value export markets³⁵ (see Cai, 1998 and van Gelder, 1988 for a detailed assessment of consumption patterns in the industry).

³² This compares with Australia's cattle herd of around 25 million

³³ Lin (1997, 203) writes that the cattle market of 1996 experienced similar oversupply problems as the milk powder industry did in 1991-1992 and the egg industry did in 1996-1997.

³⁴ This was particularly evident in Anhui Province, where counties in Fuyang Prefecture plan to hold one million cattle each.

³⁵ Officials and businesspeople interviewed almost assume that, from the current very low per capita levels (around 2.3 kgs per capita per year according to official statistics), Chinese people will eat a lot more beef into the future. Concern about this is reflected in the concerns of central government (Ministry of Finance) about the capacity for the market to absorb the extra beef production that would be generated by a US\$100 million World Bank loan targeted at beef industry development.

- b) **Cattle prices.** Cattle prices rose consistently throughout the 1990's, peaked in early 1996 at up to Rmb9/kg liveweight, underwent a correction and have since levelled out a more sustainable level of about Rmb7/kg (note that these prices are for a generic type of cross-bred (improved) cattle at less than three years of age in the Central Plains region of China). With the notable exception of different per kilogram cattle prices for improved and unimproved breeds of cattle, little price differentiation is evident in live cattle markets in particular.
- c) **Live cattle markets.** The vast majority of cattle in China are sold through live cattle markets. Cattle transactions are usually made directly between producer and buyers although agents are common in provinces like Shandong. Purchases are made on visual assessment. The majority of cattle at market on open days are not sold, meaning that producers often lead cattle to and from local markets on the same day. This is partly because, given a lack of public price information, producers want to test the market personally and partly because markets act as socialising point. Independent dealers and purchasing agents for integrated feedlot / abattoir facilities are common at larger markets. In some ways, live cattle markets are a buyers market (*maifang shichang*) where producers are often in a passive (*beidong*) selling position.
- d) **Contract and direct purchase arrangements.** Supply contract (*hetong*) arrangements are seen by many writers and officials as a dominant organisational form on which agro-industrialisation will be built (Wang and Jin, 1996). Much of the enthusiasm for this model seems to have derived from the production system of the Thai group Charoen Pokphand (known as *Zhengda* in China) which has entered into about 160 joint ventures in China, mainly in the feed production and to slaughter chicken sectors. Indeed, some of the staff of a massive Zhengda joint venture in Changchun, Jilin Province, have been absconded by the provincial Beef Development Project to transfer the system for an abattoir that has the capacity to kill 150,000 head of cattle per year and has contracts with 20,000 fattening units (mainly specialised households but also feedlots). Cattle are fed to slaughter weight by fattening units to set specifications on a strict feed regime and health inspection standards. Contracted households made the necessary investment in facilities, and sometimes provided with access to credit lines, on the understanding that forward contracts and compensation schemes would guarantee a fixed return. Unfortunately, the very highly capitalised abattoir began operations behind schedule and did not have the beef sales contracts in place. As a result, the abattoir reneged on many of its' contracts with fattening units (involving significant compensation payments).

The fixed contract arrangement of the abattoir in Changchun is exceptional in China. This contrasts with the U.S where 22.5% of cattle (and 14.5% of pigs) were produced on contract (Barkema, Drabenstott and Welch, 1991). Looser supply arrangements were heard about in Anhui and Shandong provinces, and appear to be far more common in China as a whole. In Fuyang Prefecture, Anhui Province, one abattoir / food company paid a premium to fattening units that could supply at least 200 head of cattle per year that met company specifications. In a number of prefectures in Shandong Province, abattoirs had verbal supply agreements with at least ten feedlots and specialised cattle-raising villages.

- e) **Feedlot production.** The Ministry of Agriculture (Feed and Information Departments) estimates that about 10% of Chinese cattle are turned off for slaughter through feedlots³⁶. When cattle prices reduced in 1996, the percentage of cattle finished in feedlots decreased significantly in most areas. Many feedlots closed operations or continued operations well under-capacity. Many feedlots continue to operate well under capacity and a series of feedlot surveys show that many operate under very tight margins. Compared to household producers, feedlots have high per head cost structures and, most importantly, are less flexible to fluctuating market conditions. Despite this, the number of 'scale' (*gouimo*) feedlots in China has proliferated in recent years. This appears to be a result of entrenched attitudes, encouraged by policy-makers, that large-scale production facilities are necessarily desirable, rather than a response to market signals. However, abattoirs targeting premium beef markets have a

³⁶ It is important to note, however, that this figure appears to include cattle produced by large-scale households and that large inter-regional differences exist

clear incentive to build and integrate feedlots into their operations so as to ensure continuity of quantity and quality cattle.

- f) **Household cattle production.** Most cattle in China are held by households that raise less than three head, predominantly for draught and transport purposes. This type of unspecialised household is predominantly involved in cow-calf production. At the same time, a growing number of households are becoming more specialised in the production of cattle marketed to abattoirs or feedlots for final finishing. Household producer surveys conducted in 1998 also show that margins for commercial cattle production are slim. Wen and Zhang (1996) show, however, that households in Fuyang Prefecture, Anhui Province, have clear incentives to produce cattle on a treated straw-based diet.

Households have lower and more flexible cost structures than do most feedlots. In particular, feed regimes can be adjusted according to market conditions – straw from household plots is a low-cost roughage source and protein and energy sources can usually be supplied from other crop by-products (wheat husk, soybean or cottonseed cake etc.). After filling state procurement quotas, other grains (corn in particular) can generally be provided from on-farm crops. Larger specialised households (fattening up to 50 head at an one time) obviously need to buy grain on the open market. Moreover, depending on the household herd size, can be done by household members that would not usually undertake the main productive, heavy labour activities. The nature of household cattle production in China means that they are essentially small-scale feedlots. That is, cattle are usually confined in courtyard and tethered on roadsides and are fed and watered by household members. The main difference between households and feedlots is in feed and (associated) management regimes.

- g) **Slaughter issues.** As indicated above, small slaughter households dominate the cattle sector in China – they account for up to 90% of all the beef produced in China. Slaughtering of sheep and cattle has traditionally been the domain of Hui minorities that use *Amin* (Halal or Muslim) slaughter techniques. Today, most cattle killed in households are killed by Hui slaughtermen, either on a contract basis or in Hui households. Moreover, most abattoirs employ *Amin* slaughtermen. Before 1985, General Food Companies (GFCs) monopolised the sheep and cattle slaughter sector, established to provide subsidised beef and mutton to Muslim minorities throughout China. These GFCs are, however, tend to be inefficient SOEs that are struggling in the deregulated beef market. They are under competitive pressure from and have lost the vast majority of their market share to slaughter households in the low value mass market and to newly established modern abattoirs in the premium markets. Many GFCs have sought to remain viable by selling company shares, partly to help finance the upgrading of often outdated equipment, and by increasing reliance on distribution networks and facilities. As indicated above, joint-venture and shareholder companies, often in conjunction with government or joint venture interests, are investing in the establishment or renovation of modern abattoirs.

A summary of the current situation and reform measures includes the following points. Most significantly, there are moves underway to effectively ban the household slaughtering of cattle, as is the case (officially at least) in the pig and chicken slaughter sectors. The often unhygienic practices used by slaughter households and the inability of government to effectively inspect them are cited as reasons for the imminent ban that will take many years to have full effect (be enforced). The social costs of closing the operations of slaughter households, and on the Hui population in rural areas in particular, will be significant. Officials are aware that it will not be possible to re-employ a significant Muslim slaughterers and slaughter households into abattoirs and Designated Slaughter Points that are to replace them. GFC's expect to gain as a result of the regulatory changes³⁷. Types of distribution systems are usually closely tied to types of slaughter

3. Models of agro-industrialisation of the cattle and beef industry.

This section outlines the characteristics (*tedian*), advantages (*youdian*) and disadvantages (*quedian*) of 'top-down' and 'bottom-up' models of agro-industrialisation. These are applied to a number of sectors of the

³⁷ Budget / cost comparisons of different types of slaughter units were conducted as part of the ACIAR / MLA projects.

cattle and beef industry; the fattening sector in particular, but also the slaughter and distribution sectors. This framework is an approach to questions raised by Chinese writers on ‘who leads the agro-industrialisation process?’ and ‘who acts as the central link’ between producers and consumers?

3.1 Top-down model of agro-industrialisation

Under this model, agro-industrialisation is led by enterprises that, at present, act in conjunction with government, the latter having a role in both industry administration / planning and also in industry management functions, through both direct industry intervention and direct investment and ownership. This model is ‘top-down’ or ‘corporatist’, in the sense that these large institutions lead industry development or seek to determine the pattern of industry development and dominate value-adding and marketing chains.

The structure of the Chinese cattle and beef industry itself can hardly be characterised as ‘corporatist’, though policy objectives could be. On an industry-wide level, households are the dominant actors in the cattle production, slaughtering and trading sectors and also in the beef distribution and retailing sectors. A number of counter-arguments can be raised. Firstly, households only dominate low-value, mass-market aspects of the cattle and beef industry. Naturally enough, mid and large scale vertically integrated companies dominate activities in mid and high level market levels. Second, and more importantly, the establishment of ‘scale enterprises’³⁸ are usually seen as instrumental to industry development plans³⁹.

Talking about the animal husbandry industries in general – with an obvious emphasis on more developed chicken and pig industries – Lin (1997, 203) writes that “because the core of market is tending toward the ‘management and sales era’ (see above for meaning), decision-making about what and how much to produce has largely been transferred from farmers to ‘management and sales organisations’ (*yingxiao zuzhi*) in fact decision-making in the whole animal husbandry sector is led and co-ordinated by (management and sales) enterprises. It can be said that production in the animal husbandry sector is commanded (*zhiling*) by enterprises”⁴⁰.

3.2 Advantages of a ‘top-down’ model of agro-industrialisation.

- a) **Lower transaction costs associated with vertical integration.** It has long been established that vertical integration can reduce transaction costs of companies (Barkema and Cook, 1993; Coase, 1937 and 1960; and Williamson 1979, 1986 and 1971). This literature would imply that abattoirs and food companies have an incentive to reduce costs associated with searching for and transporting cattle, ‘educating’ household producers and ensuring the quality of or lack of chemical residue. Moves to ensure the continuity of cattle supplies that meet specification helps explain why these companies nearly always establish sizeable integrated feedlots⁴¹.

³⁸ ‘Scale enterprises’ in the cattle and beef industries could include: abattoirs that kill more than 30,000 head per year; distributors that have cold storage facilities with a capacity of more than 300 tons, and; feedlots with a capacity to hold more than 500 head at any one time.

³⁹ There are of course inter-regional differences. In Dezhou and Heze Prefectures in Shandong Province for example, prefecture and county planners saw cattle (and beef) production – rather than ‘deep processing’ (*shen jiagong*) – as the most appropriate regional activities. It is interesting that Shandong is known as the most agro-industrialised province in China, certainly because of the large number of agribusiness companies in the province, but possibly also because planners seem to equate ‘value-adding’ with profitability and niches etc. rather than scale, capacity to be involved in every aspect of the market etc. An instructive example of attitudes of policy-makers was noted in Chengde Prefecture, Hebei Province where prefecture-level Commerce officials effectively gave senior prefecture-level Animal Husbandry Bureau (AHB) officials an ultimatum to attract investment (from any source) to build an ‘agro-industrialised’ enterprise (of any type) within a fixed period of time. The career of the AHB official was therefore tied to his ability to implement a component of the agro-industrial policy which, of course, derived from the highest levels and was essentially passed down the administrative regions. While the comparative advantage of establishing a beef or by-product processing plant in the region was not obvious, the AHB official was nevertheless anxious to see the enterprise developed.

⁴⁰ In a totally agro-industrialised China, households would, at minimum, still play a role in cow-calf production (ie. the supply of feeder cattle to feedlots). That is, households would act as producers at the bottom of the chain, producing the most basic raw materials (cattle) for further processing and marketing by companies.

⁴¹ Jensen, Kehrberg and Thomas (1962) look at transaction costs as an explanation for beef packing companies to integrate pre-production and post-production activities.

Companies would appear to have a greater incentive to integrate under highly imperfect market conditions. This is important where, i) households are generally small-scale and very geographically dispersed, ii) the industry itself tends to be highly fragmented partly for historical reasons⁴², iii) China does not have a standardised cattle or beef grading system, and; iv) there is a lack of detailed, accurate, easily accessible market information and market signals are not always clear⁴³. Large scale units tend to build information and 'internal standards' within the corporate structure. Moreover, economies of scale are important in the abattoir sector (for premium beef products at least and if facilities are used near capacity) and equipment is expensive for private individuals and companies.

- b) Resource availability.** Many writers identify capital shortage as the major constraint to the implementation of agro-industrialisation (Hunan Province Branch of the China Agricultural Bank; Gu, 1995). There is a broad consensus that 'scale' enterprises are best able to provide the resources (capital in particular but also management skills) required by modern, increasingly commercialised agricultural industries. In reality, there is a lack of private capital formulation in rural areas of China. Individuals rarely have access to credit on scale required to establish a company and households seem either unwilling or are ineligible for bank loans (credit co-ops, the Agricultural Bank of China). Amongst others, two factors help explain this: households do not have any 'legal status' (*faren weizhi*) for commercial registration purposes, and; large investments are required to build a 'scale', 'dragon-head' enterprise.

Given that government is the major source of funding (grants, loans, subsidies and direct investment and ownership) for agricultural development, a major issue exists about which organisational form, or group of industry actors, government funds should be allocated to or through. At the same time, rapid economic growth in China would seem to have increased the volume of corporate or conglomerate funds, sometimes accumulated in other sectors. One argument for a 'top-down' or corporatist model of agro-industrialisation then, is that it (a combination of government and big business) provides a vehicle through which the most capital can be accumulated, or where government funds can be concentrated.

- c) State participation in company activities.** Chinese management literature (see for example Chen, 1998) sometimes discusses State participation (through ownership, representation in corporate boards) in company management as a positive issue from a 'public good' perspective. Because state shareholders (in so far as their representation (*daili*) roles are concerned) play a dual role in managing the economy and also the company, they are more likely to support decisions in congruence with their public positions, namely, to support the public interest. As stated below, however, this potentially gives rise to management inefficiencies and to potential conflicts of interest.
- d) Market power.** This is often mentioned by writers and officials, and refers to a situation where large, diversified companies have a greater ability to produce high quality products and to compete on large and complex markets. Households can effectively 'shelter' behind these powerful companies.
- e) Effective industry targeting.** If the domestic market for beef increases significantly in value, or if China can arrange export protocols with high value export markets (Japan and Korea for example), the industry will, in many respects be prepared and already have infrastructure (physical facilities at least) in place. Modern companies that exhibit economies of scale will be able to monopolise on opportunities as they arise rather missing opportunities or having to undergo a long process of building industry facilities and expertise. This can be seen as far-sighted or, alternatively, risk-adverse policy-

⁴² Niu (1997, 5) says "Under the Chinese 'traditional' planned economy (system), the agro-industrialisation (process) became fragmented (*fenge*) ... the agricultural department (meaning Ministry of Agriculture, *nongye bumen*) was responsible for production, while value-adding and sales and marketing activities were granted (*guirang*) to the commercial and industry (*gongshang*) departments (meaning the former Ministry of Commerce, then the Ministry of Internal Trade, which controlled the General Food Company System and have since been relegated to a Bureau under the Economic and Trade Commission, and the former Ministry, now Bureau of Light Industry). This implemented (a system where) many departments engaged in unco-ordinated (*tiao tiao*?) management ... (which means that actors in the) central (*zhongjie*) market segments are many, and transaction costs are high. In order to pursue their own interests, relevant (*youguan*) departments (government bodies) often used their monopoly positions to damage the interests of peasants (*nongmin*) ... it became very difficult to manage hindrances to the shape (*xingcheng*) of a domestic unified market".

⁴³ Hennessy (1996) discusses information asymmetry as a reason vertical integration in the food industry.

making. If the policy measures do not prove effective / appropriate, depreciated facilities can be used for alternative purposes and at least no-one will be blamed for being conservative.

- f) **Better quality beef.** Large companies are more likely to produce and sell hygienic meat than small, private companies. In fact, the production and sale of low-grade, poorly presented and sometimes unhygienic beef (although this is demanded by many consumers on current expectations and price levels) is detrimental to the marketing / popularising (*xuanchuan*) efforts depicting beef as a good and healthy meat.

1.4 Problems (*wenti*)⁴⁴ associated with a top-down level of agro-industrialisation.

- a) **Associated enterprise management problems.** As outlined above, vertical integration can reduce transaction costs for individual firms and on an industry-wide basis. However, internalisation of costs within a corporate structure also brings on (*dailai*) several problems. First, Coase (1960) raises the issue that if the resultant increases in management costs or transaction costs within the firm outweigh the reduction of transaction costs in the market chain, vertical integration is not an economic proposition. Costs are effectively transferred to company structures, which might need further government (public) support. Companies then effectively become an (often inefficient) arm of government. Second, the experience of some Chinese enterprises shows that companies with a strong state representation (*guojia daili*) in ownership structures and management structures are more susceptible to management interference by government (influencing company decisions), decision-making not necessarily in the best interests of the firm and, in some cases, creates possibilities for corruption. Such an arrangement are counter to enterprise reform measures, currently prioritised in China, and may bring about industry and management inefficiencies (Chen, 1998). Third, companies that are diversified across vertical market sectors in a sophisticated industry (which in many ways the meat industry is) requires sophisticated management structures and practices which are not always evident in new Chinese enterprises⁴⁵. It might be more efficient for firms to retain core competence, remain flexible in decision-making and integrate with other links in the chain through external arrangements. Some officials (and competitors) say that a number of companies do not know enough about beef and cattle to enter into this industry. Fourth, large conglomerates are more likely to build or be granted monopoly positions in targeted markets⁴⁶. It is important to note, however, that the preceding points may not hold for all companies with a strong state participation⁴⁷.
- b) **Associated industry-wide problems.** The following problems or potential problems are associated with industry targeting under the 'corporatist' model. First, large-scale plans can result in large-scale industry losses / losses of public funds, particularly if market trends are miscalculated or pre-empted by a long period of time. Risks are higher if thorough market research is not undertaken, if industry development is led by policy-making rather than market forces and, of most relevance in this section, if the 'leading' organisational units are large-scale, over-capitalised and inflexible. Second, the replication of 'corporatist' models of development has resulted in the proliferation of Dragon-head enterprises in the industry which could lead to further over-supply problems, particularly given that premium beef markets are small, both in volume and in relative importance, in China⁴⁸.

⁴⁴ The term '*wenti*' is versatile in that it can mean 'problems', 'issues' and 'questions'.

⁴⁵ The Hope Group in the feed sector is one of many examples. It is worth noting that some Western companies in some industries are down-sizing business scopes to concentrate on core business interests.

⁴⁶ Contrary to this situation however, as a result of the tendency of government and enterprises to replicate industry development plans (outlined above), this is this does not represent a major problem in the beef and cattle industry. Anti-competitive practices, particularly those associated with exclusive contracts and network control, are more likely to arise through relationships (*guanxi*) between enterprises and government.

⁴⁷ In an econometric study incorporating data from five different sources, Wu (1996) (reviewed by Harry Wu), finds that there is no difference in efficiency between centrally and locally controlled enterprises in the iron and steel industries, but that enterprises owned by county and prefecture governments in the coal industry are more profitable than those owned by central government. Wu also finds that urban industry as a whole is more efficient than rural industry. These results refute the popular perception that SOE's are less efficient than TVE's and privately-owned enterprises. Despite this finding, SOE's are fast losing ground to collective and the private enterprises (China Statistical Yearbook, various years).

⁴⁸ These problems not only distort the industry structures but use the public coffers to do it, to the detriment of all but corporate managers and officials that are promoted because they are responsible for building big companies.

- c) **Contradiction in policies.** As stated above, the cattle and beef industry was originally targeted for development (under the auspices of the Straw for Beef Program) because of its' grain-saving characteristics. A potential contradiction exists, however, because the production of high quality cattle and beef requires that cattle be fed on a grain-intensive diet. Cattle convert grain much less efficiently than do chickens and pigs, and if agro-industrialisation develops rapidly and on a widespread scale, the effects will be the opposite of those aimed at under the Straw for Beef Program. This could cause a policy dilemma within 10 years. In reality, however, straw will remain the most important feed source for mid and low level cattle markets in China and both "programs" / industry strategies will run concurrently (Waldron and Zhang, 1998).
- d) **Impact on households.** The meaning of the model 'company + household' implies relegation of companies to the position of leader of the agro-industrialisation process and households to a position where they follow the process (mainly through the provision of raw materials). In many ways, it is a 'patrimonial' relationship. A number of problems are involved. First, households are confined to low value-adding activities or are restricted from participation in 'downstream' activities, while companies dominate high value-adding activities. This is a problem because underemployment and surplus labour is already common in rural China. Even under this role, there are a lack of bargaining power and organisation amongst households and lack of effective systems to ensure that 'fair' prices (of cattle) are paid to producers that reflect household investment, risk and labour inputs. This is difficult given policy emphasis on (and sometimes strong 'encouragement' of) household cattle production, when households sell on an open / public cattle markets, when abattoirs within a county sometimes hold a monopoly position and when individual producers can not afford to transport to other markets⁴⁹. Also importantly, household producers invest to 'link' themselves with a company that has ambitious plans. Household develops a relationship with the company and might become reliant on it. Given the systematic problems or potential problems in enterprise management and in industry structures (particularly over-supply problems), this entails significant risks. Formal legally binding contracts involving compensation arrangements overcome some of these problems. As mentioned earlier, in at least one case, where the abattoir started operations many months later than expected, producers were left with over-fat cattle and were waiting for compensatory payments from a cash-strapped company. Some writers note the lack of institutional arrangements that protect the rights and interests (*quanyi*) of households under the agro-industrialisation strategy and guarantees that revenues are 'returned' (*fanhuan*) to households. Discussion below is aimed at providing an alternative and complementary model to the 'top-down' or 'corporatist' model raised in this section, to countervene some of the problems or potential problems raised in this section.

3.5 'Bottom-up' models of agro-industrialisation.

'Bottom-up' models of agro-industrialisation contrast with 'top-down' or 'corporatist' models outlined above. While both are valid, and many ways, complementary models to achieve the objectives of agro-industrialisation (outlined 1.1 above), much less official and academic support is given to 'bottom-up' models of agro-industrialisation. One distinguishing characteristics of 'bottom-up' models are that households participate not only in supply of raw materials (feeder and slaughter cattle) but also participate in segments further up the marketing chain (within agro-industrialised structure and in mid-grade beef markets). Participation involves responding to market signals and the bigger challenge of building ownership and direct management activities (in the upper market links). Government also has a different role. Rather than investing directly in enterprises, it would be more confined to the provision of services, infrastructure and an environment conducive to agricultural integration and commercialisation (including the provision of information, standards, extension and legal activities). An argument could also be made that a greater percentage of government funds should be diverted to the establishment of co-operatives etc.

⁴⁹ Households are vulnerable to blatant exploitation through late payments etc. Newspaper and television news mediums often run stories on the incidence of farmer (or peasant) exploitation – for example, in 1998 county officials in Hebei provided credit tickets to farmers, rather than cash, for grain quotas. The grain was sold and proceeds 'invested' in the construction of a hotel (for 'face' reasons, to impress and attract guests). The hotel was over-capitalised for the small county capital town and failed to attract many paying customers. As a result, officials could not convert credit vouchers into cash for the farmers. The farmers are seeking compensation. An recent article on this subject appears in The Australian Financial Review, 1999

rather than to enterprises. Also importantly, socio-economic factors (social costs of not undergoing 'bottom-up' reform), as well as commercial factors, are important considerations in the assessment of strategic options⁵⁰.

The following discussion places emphasis on the role of co-operatives: a) because they represent the 'purest' form in which households can participate in a 'bottom-up' model of agro-industrialisation; b) to simplify analysis in this section, and c); because genuine co-operatives are scarce in China. Discussion therefore aims to show that these are applicable and useful organisational forms of organisation in the development of the cattle and beef industry. It should be noted, however, that a range of organisational forms are relevant to a 'bottom-up' model of agro-industrialisation. These include *some types* of collectives, TVE's and shareholding companies⁵¹. All of these are active and much more common in the cattle and beef industry than are genuine co-operatives, in ways outlined in examples in this section. Shareholding companies are seen as important ways of implementing agro-industrialisation measures for a range of reasons (Wang and Jin, 1996). While co-operatives are seen as important in the development of the cattle and beef industry, organisational structures listed above are also appropriate in some cases. Indeed, there appears to be value in the official line that encourages a diversified ownership structure in the rural sector. There is also some common ground between the *some types* of structures listed above⁵². The examples used in this section have characteristics in common with co-operatives in the following areas.

- Several members / shareholders have ownership stakes and have scope to be involved in management decisions.
- All aim to collate members to pool resources, spread risk, increase scale and specialise to enter markets and, in some cases, higher value markets
- Profits are distributed on the basis of contribution
- Co-operatives can evolve into shareholder companies in particular, depending on requirements (Wang and Jin, 1996 and Lin, 1997, discuss the similarities between shareholder companies and co-operatives)
- Collectives and specialised villages can evolve into co-operatives

There are, however, substantial differences – listed below – between co-operatives and other organisational forms and it is clear that significant re-organisation, often involving disbanding the original form, would be required if any transitions were made between forms.

- Large shareholding companies are usually invested by government (in the cattle and beef industry at least).
- Collectives are usually managed by village, township or town level government.
- Management and ownership principles are very different⁵³

⁵⁰ Lou (1985) writes that "agricultural modernisation is conditioned upon social needs, and thus it must begin with commercialisation of agricultural products, the socialisation (shehuihua) of agricultural products and the re-distribution of industrial funds on the basis of division of labour and diversification of trades". Johnson (1996) highlights the failure of agricultural reform measures to ease income inequalities between urban and rural areas and inter-regionally. Li (1998, personal communication), highlights eight issues in which an urban bias exists.

⁵¹ These models will be built into subsequent revisions of this paper.

⁵² Indeed, it is very difficult to distinguish between many types of companies, collectives and co-operatives. The term 'company' and 'co-operative' in particular have been interpreted very widely. There is no real law that sets out criteria to distinguish these or to define different types of co-operatives. Defining co-operatives by their principles of organisation is difficult because different co-operatives have very different principles. This is one of the reasons why it has been difficult to establish a co-operative law (Li, Yuan, personal communication).

⁵³ The Sunan (Southern Jiangsu) model of TVE was originally based on collective ownership principles. The Wenzhou (in Zhejiang Province) model was based on individuals engaged in processing activities on an individual basis and often become shareholding companies. The other model – Quanzhou (Fujian Province) – is not really relevant to agriculture (but to joint ventures with overseas Chinese in other sectors). All of these models have evolved into other types of companies and all experienced different types of problems (Wu, ?). The collective economy is widely thought to be likely to replace state-ownership as the dominant form of ownership in the economy. It is projected to account for nearly 50% of all industrial output by the year 2000, while private and foreign ownership is projected to account for 13 to 12% respectively (in 1985, state-ownership accounted for 65% of industrial output). (Wen Weipo July 13, 1992). That is, the 'public sector' (*gongyouzhi*) – including SOEs, TVEs, collectives and various mixed forms of shareholding organisations – will remain dominant in China's reform toward a market economy. Shareholding companies appear to be likely to become the dominant enterprise structure. These cover a vast range of company structures and scales; from an amalgamation of a few households to a reformed co-operative or SOE, from those with no state ownership to those with majority state ownership, to companies that have listed on the stock exchange. The way in which shareholder enterprises will be organised and managed – to build efficiency and fair distribution of profits to shareholders – is the subject of much experimentation and academic and official debate. Wang and Jin (1996) look at applying shareholder company models to agro-industrialise China and Han and Gao (1996) overview different types of shareholder companies.

- Levels of government acquiescence and legal recognition are different.

Also relevant to discussion below is the role of specialised households. These are important components of the agro-industrialisation process because of their scope to produce better products on a larger scale using better production and management techniques. Specialised households are most likely to constitute membership of co-operatives, particularly so-called ‘specialised co-operatives’. Specialised co-operatives (that are focused on a particular economic activity, are run ‘by the people’ (*minbande*) and growing faster than other types of co-operatives) are the main focus of discussion in this section. The role of specialised villages (administrative or natural villages and sometimes also townships or towns) is also relevant and produce a very large proportion of the cattle in China⁵⁴.

This section is structured as follows: first, section 3.6 outlines the basic situation (*jiben zhuangkuang*) because it raises issues – and problems – that face farmers seeking to establish and join co-operatives; second (3.7) discusses ways in which co-operatives and other groups can and do participate in the cattle and beef industry is outlined; third (3.8) problems with the ‘bottom-up’ model of agro-industrialisation are outlined. While it is clear that difficulties exist in establishing co-operatives in the cattle and beef industry, it is also clear – particularly given associated socio-economic issues – that more emphasis on a ‘bottom-up’ approach to agro-industrialisation should be considered.

3.6 ‘Basic situation’ of co-operatives

A number of Chinese writers emphasise the importance of co-operatives in the rural economy. This are overviewed here because they are indicative of the broader issues (and problems) that households face when seeking to establish and enter into co-operatives. According to Wang (1997, 19) “in the middle of the 1980’s, rural regions underwent a ‘unification fever’ (*lianhere*) involving all types (*gezong*) of economic bodies (*jingji lianheti*), associations⁵⁵ (*xiehui*), research bodies (*yanjiuhui*), shareholding co-operatives (*gufen hezuoshe*) etc., which is a positive reflection (*fanying*) ... despite the fact most of them are not genuine (*zhenzheng*) co-operatives, they still constitute the primary shape (*chujing xingshi*) of co-operatives and form the basis (*jichu*) of future co-operation”. According to Zhang (1996, 6), in “Shanxi, Shaanxi, Hebei, Anhui and Shandong etc. importance is being attached to work on the development of co-operatives ... in 1996 there were 1,400,000 peasant organisations (*nongmin zuzhi*) in China distributed widely across many areas of the rural economy”. In Caiyang City, Shandong Province, every type (*gelei*) of processing and sales co-operatives (*jiagong xiaoshou hezuoshe*) have been set up by peasants (*nongmin*), 78.6% of households participate, (and this) satisfies (*manzu*) the urgent needs of most rural households and the needs introduced by dragon head enterprises”. Yang, 1997 says that “Heilongjiang Province relies (*yituo*) on village supply and marketing co-operatives (*gongxiaoshe*) ... 400,000 households participate in the establishment of cropping, animal husbandry, processing and specialised co-operatives ... this accounts for 10% of all households (in Heilongjiang)”. A high-ranking official of the Bureau in charge of rural co-

⁵⁴ Large numbers of households – 80% of all households in many cases – within these administrative units focus on the production of the same type of agricultural produce. Specialised cattle producing villages are common in model Straw for Beef counties (funded under the program) and specialised slaughter villages are also common in these counties, particularly if Hui minorities are concentrated in or have moved to a village. One specialised cattle-producing village had also set up a large mushroom industry to utilise the large quantities of manure produced in the village. Common infrastructure is sometimes built and used, often at a subsidised rate. In the cattle industry for example, the concrete for cattle sheds and straw treatment pits was poured at the same time, thereby reducing costs. Subsidised artificial insemination stations can be established and semen freezing equipment can be bought in, in the knowledge that it will be used by large numbers of households. This also generates commercial opportunities for households within the village to specialise in support activities – straw cutting and feed processing for example. Cattle are usually sold at local town markets although some have arrangements with abattoirs that truck cattle from the village. Specialised villages, like co-operatives, appear to be a form of organisation suited to the needs of agro-industrialisation. There are a number of arguments against this. For a start, households are encouraged – sometimes strongly persuaded – by local officials to engage in the specified industry and associated activities (voluntary participation principle different). Most specialised villages concentrate on basic production activities and often not very professionally (value-adding and vertical integration). Moreover, there are indications that as initial subsidies ran out, households started to lose interest in straw treatment for example. Certainly the level of industry vitality that would come from group management and decisions seemed to be waning in some specialised villages visited.

⁵⁵ A large number of technical and industry associations exist in China, including in its animal husbandry sector. They are in theory non-government but actually closely tied to government. Some come under the Science and Technology Commission structure and others under the Ministry of Agriculture. A number of interviewees say that industry associations have not really realised their potential. In many respects, they act as retirement grounds, but could be more active in extending technology and market information and in acting as a type of industry peak body.

operatives at the central level said that 32% of all integration (synonym for agro-industrialisation) in China takes place through co-operatives⁵⁶. The same official says that the role of co-operatives are growing for two reasons. First, enterprises do not want to deal with households on an individual basis. They want to deal with fixed partners that can ensure quality and quantity of supply. Second, it is becoming difficult for households to find markets for their (agricultural) products (Li, personal communication).

While comments and statistics like these show that a co-operative structure is certainly in place in China, they need to be interpreted critically. There is a general consensus that most co-operatives in China are not 'genuine' (*zhengzheng*) co-operatives at all. Most do not exhibit the commonly-accepted principles of co-operatives⁵⁷ or have not realised (*fahui*) their potential⁵⁸. For example the vast Supply and Marketing Co-operative system operates as a state-owned⁵⁹ network in which households and farmers do not really participate (*feiminbande*). Credit Co-operatives (*xinyong hezuoshe*) formerly under the Agricultural Bank of China are, in relative terms, rarely utilised and are not managed by rural households. There are, however, various forms of co-operatives that can be called 'genuine'. Ministry of Agriculture officials overseeing the co-operative economy, for example, classify the fast emerging 'specialised co-operatives' (*zhuanye hezuoshe*) that concentrate on particular industries and industry segments as 'genuine'⁶⁰.

There is also a consensus that the Chinese co-operative system is underdeveloped compared to developed (*fada*) countries. Wang (1997, 15) for example says that in the United States, 80% of agricultural produce (*nongchanpin*) is processed or transported by co-operatives⁶¹, and that co-operatives supply 44% of fertiliser and fuel and organise 40% of loans. In France, co-operatives produce more than 50% of the milk and 71% of grain ... 45% of grains, 80% of fresh fruits, 35% of meat and 40% of poultry that is exported pass through co-operatives. Co-operatives in West Germany control 79% of the dairy market and 55% of the grain market and 42% of the vegetable market.

There are a number of explanations for the lack of development in Chinese co-operative system. First, Wang (1997, 19) overviews historical reasons that have led farmers themselves to reject the idea of participating in co-operatives as follows.

In the 1950s, 'elementary organisations' (*chujishe*) and 'advanced organisations' (*gaojishe*) acted as production co-operatives (*shengchan hezuoshe*). These co-operatives evolved into communes and a type of industry / agriculture / commerce brigade (*gongnongshang bingwu*) that were inseparable from (and instruments of) government, operating under a planned economic system. This system negated (*fouding*) (the scope to undertake) household management practices, negated (the principle of) profit and share distribution, negated co-operation in the (provision of) pre-production and post-production services, and negated the principles of voluntary (*ziyuan*) participation, independence (*zizhu*) and self-governance or autonomy (*zizhi*) ... administration led organisation and egalitarianism was 'prevalent' (*shengxing*). As a result, from that time until

⁵⁶ This was said to be based on a study of 10,000 co-operatives and households. The comment referred to transaction between households and companies, 32% of which passed through co-operatives.

⁵⁷ 'Genuine co-operatives' operate under the principles of: open-ness (voluntary participation and freedom to withdraw); democratic rule (one person, one vote); distribution of profits according to contribution; the distribution of revenues is subject to restrictions (*gujin fenhong shoudao xianzhi*), and; that co-operatives should be non-profit organisations (with regard to internal management) (Yuan, Rural Organisation and Structure, IRD, personal communication, 1998).

⁵⁸ Some interviewees also came to the same conclusions about industry associations and research groups.

⁵⁹ Under the ex Ministry of Commerce, which became the ex Ministry of Internal Trade, which has now been downgraded to the Bureau of Internal Trade under the Economic and Trade Commission structure. Supply and Marketing Co-operatives are losing market share to other networks, including Ministry of Agriculture networks in many sectors.

⁶⁰ Four original types of co-operatives lost their independence and merged with People's Communes in the course of collectivisation after 1956. They are: the supply and marketing Co-operatives (*gongxiao hezuoshe*); credit co-operatives (*xinyong hezuoshe*); industrial co-operatives (*gongye hezuoshe*), and; artisan co-operatives (*shougongye hezuoshe*). Since the reform measures of the early 1980's three 'new' types of co-operatives have been established under the Ministry of Agriculture. These belong to the 'shareholding co-operative system' (*gufen hezuozhi*) and are different to the first group of 'original' co-operatives in that they are supposed to be 'run by the people' (*minbande*). These are: the rural shareholding enterprises (*nongmin gufen hezuo qiye*); the rural co-operative (credit) funds (*nongcun hezuo jijinhui*), and the community shareholding co-operative organisations (*sheqixing gufen hezuo zuzhi*). Two final types of co-operatives are the 'specialised co-operatives' (*zhuanye hezuoshe*) and the 'marketing co-operatives', both of which are said by relevant officials to have the greatest potential for expansion. Associations sometimes applicability to co-operatives. For more information on classifications see 'Report on the International Workshop on Co-operative Law, 1994'

⁶¹ This figure seems high

today, when (the term) ‘co-operative economy’ is mentioned, peasants / farmers still have a lingering fear (*yuji*) (of communes), ‘turn pale at the mention of the tiger’ (*tanhusebian*), and has produced a ‘fear of co-operation disease’ (*konghebing*) ... this is the major reason why the rural co-operative economy has not developed.

There are also obstacles that dissuade farmers from establishing and joining co-operatives. Some interviewees indicate that government is reluctant to allow the development of co-operatives⁶². Another reason is that there is no co-operative law in China (*hezuoshefa*). Co-operatives can not be ‘publicly recognised’ (*gongren weizhi*) or hold ‘legal person / entity’ status (*faren weizhi*) and they can not enter into a legally-binding contracts or register co-operatives (with the Industry and Commerce Administration Bureau). As a result, it is more problematic for co-operatives to successfully apply for bank loans or enter into formal contracts (although they can for example collect receipts). Formally, co-operatives are not eligible for preferential tax treatment⁶³.

In sum, farmers are generally suspicious of the co-operative concept and those that want to establish co-operatives face systematic obstacles. As a result, China’s modern rural economy (under the Household Responsibility System) displays many characteristics that are the polar opposite of the commune system. Most notably, there is a tendency for rural households to remain as self-sufficient as possible and to reduce interaction with other households and with institutions. In the case of the cattle industry, many cattle-producing interviewed show a strong preference to remain self-sufficient (within the scope of the household). Despite the apparent benefits, they were reluctant to buy feed on the open market, to employ off-farm labour, apply for bank loans or enter into supply contracts. A much smaller (but seemingly fast-growing) percentage of households in various regions have, however, shown a willingness to take these steps, thereby becoming specialised cattle-producing households. Only in exceptional cases have households taken further steps (logistically and attitude-wise) to establish and join a cattle producing co-operative that could pool feed, labour and capital resources and enter into supply contracts on a group basis. It is very difficult to find *co-operatives* of cattle-producing households that have taken a leap into ‘downstream’ slaughtering, processing and distribution sectors (through direct management or through alliance-building).

The lack of co-operation in the rural sector and the dominance of small-scale, unspecialised, scattered farmers can cause a range of problems. They generally have low economies of scale (in production activities), low purchasing power (when buying production inputs), can not move into ‘downstream’ or value-adding activities (processing or distribution), are vulnerable to exploitation (divided), can not enter into contracts to supply products of significant quantity, have few incentives to employ new or more advanced (production) techniques and extension agents have more difficulty in transferring agricultural techniques. This is detrimental to the development of both the individual household incomes / living conditions and for agricultural industries in general. Niu (1997, 5) states, rather dramatically, that “small households have management systems that are not economic, produce uneconomically, don’t have competitive power, have difficulty entering socialised market and have become a bottleneck in market agriculture development.

To change attitudes that associate co-operatives with communes will take many years, perhaps decades⁶⁴. Most importantly, as recognised by several authors, there needs to be recognition that ‘real’ co-operatives are products of the market economy, that the fundamental purpose of co-operatives are to serve its

⁶² The Guomindang issued a co-operative law in 1934 that was later used in Taiwan. The CCP drafted a new law in 1948 but it has not been passed by the People’s Congress. Scholars have in the last 10 years applied pressure to have it passed but at least one official said that this could take another five to 10 years. Some interviewees say that, like labour unions, co-operatives provide a form of organisation that could be seen as threat to the government and the CCP. On the other hand, the Ministry of Agriculture in particular seems to encourage the development of the co-operative economy and senior officials said that Jiang Zemin does not object to development of the sector.

⁶³ In reality, one official said, smaller co-operatives with a small role in local economies are not taxed (Li, personal communication). Zhang (1996, 8), who is a committee member of the Commission for Economic Structure and Reform (*tigaiwei*), says that the state should consider policy to reduce taxes on co-operative organisations.

⁶⁴ Urban Chinese often say that farmers / peasants do not have the capacity to make clever and far-sighted decisions because of so-called ‘low cultural levels’. To look down (*kanbuqi*) on farmers in this way ignores not only the massive contribution they make to China but the fact that attitudes like suspicion of co-operation are forged for good reasons over long periods of time.

members and that genuine co-operatives should not erode the independence or autonomy of individual households (Lin, 1997). While central government in particular seems to give genuine support to the development of the co-operative system – the Ministry of Agriculture has a Bureau-level division of Rural Co-operative Systems and Management that runs a number of programs and experimental zones – delays to the implementation of a co-operative law acts as a major obstacle. More concretely, regional officials overseeing the cattle and beef industry should consider including co-operatives (and other ‘bottom-up’ groups in which households can directly participate) in industry development plans and in Comprehensive Development Projects. As far as the author is aware, this does not happen in the cattle and beef industry.

3.7 Advantages and relevance organisational models relevant to the ‘bottom-up’ level of agro-industrialisation.

Discussion in this section is a summary of the organisational models that are and can be applied to the ‘bottom-up’ model of agro-industrialisation of the cattle and beef industry. These are listed in parallel with vertical links in the production and marketing chain.

- a) **Cattle production.** Producer co-operatives are the most common, basic and implementable form of co-operative. Households within the co-operative would essentially continue roles as (cattle) producers, but would tend to specialise, build their business scope and learn and use better production techniques. The main incentive for households to participate in production co-operatives is to access sales channels (*qudao*) outside the public live cattle markets (see section 2.2 above). It also allows to households to enter into forward contracts – either formal contracts (*hetong*) or less formal verbal agreements (*xieyi*) – to supply relatively large numbers of cattle. If agreements are met by companies, risks for the producers should be reduced for at least the specified time period. Enterprises (abattoirs, processing and food companies)⁶⁵ also have some incentives to enter into these contracts with the producer co-operatives so as to cut down on search, quality control and sometimes transport costs and to guarantee continuity of supply. These costs would be high if enterprises bought from small-scale, scattered households while buying through dealers (operating mainly through cattle markets) also entails significant fees. Another important function of co-operatives is to improve production techniques through group training and education activities.

This arrangement is most applicable to the provision of feeder cattle. Because households can not produce more than a few cows (even in the Inner Mongolian Autonomous Region, per household cow numbers are not more than 50), households have to form co-operatives to provide on contract well bred and fed calves to feedlots targeting premium beef markets. It is also applicable to the supply of slaughter cattle, partly because per household herd numbers are not likely to be more than 50 at any one time and partly because, as outlined in Section 2.2 above, households tend to be more efficient fattening units than feedlots (on a profit/loss per head basis). The type of arrangements outlined here would not be viable on a widespread scale under a certain conditions. First, if there were few companies targeting mid or high-value beef markets (and therefore do not require high-grade cattle). Unfortunately, these markets are small at present and there are only perhaps no more than two dozen companies in China targeting them. The vast majority of slaughter units (slaughter households, older state-owned abattoirs and food companies) essentially buy the cheapest cattle they can purchase and have no incentive to enter into arrangements with co-operatives to ensure supplies of good cattle⁶⁶. In these market conditions – where quality control, search and transport costs are low for the purchase of undifferentiated, low-value cattle – companies do not have an incentive to enter into contracts with co-operatives that produce good cattle. To the contrary, they have an incentive to ‘play’ unspecialised producers off against each other by purchasing from individual producers or at local markets. This is particularly true given the large total cattle numbers in China (oversupply in some regions), a situation that has been ‘created’ through government policy and subsidisation and actually works to the benefit of (not only producers but also) slaughter units targeting low-grade beef markets. Thus, the future of

⁶⁵ Many modern abattoirs are foreign invested (joint ventures). If foreign managers have any influence over cattle purchasing activities, that might in theory mean that the company could be more receptive to the use of contract systems.

⁶⁶ The very high demand in China for offal and hides is not a driving force for the establishment of producer co-operatives. Like the vast majority of abattoirs in China, offal processors and tanneries do not rely on supplies of high quality cattle.

the beef market will dictate the prevalence of cattle-producing co-operatives. It is worth noting, however, that the mid-level beef market seems to show the greatest growth prospects. In this area in particular, surveys indicate that specialised households hold a competitive advantage over feedlots. Another important point is that regionalisation of the industry will play a role in the demand for specialised cattle-producing co-operatives. That is, there are likely to be more in regions where large, modern abattoirs are located (Hebei for example). On the other hand: i) these type of abattoirs are scattered quite sparsely throughout central and northeast China, and; ii) there are large inter-regional movements of cattle in China – cattle and feed availability for households / co-operatives therefore probably more important factors in the regional distribution of these type of co-operatives.

An example of a large producer co-operative was visited and surveyed in Shandong Province⁶⁷. The co-operative comprised of 40 households from the same sub-district. The other 25 cattle-producing households in the sub-district are involved in cow-calf production. In 1994, the households invested in rows of the feedlots that had a capacity of 50 head each (total 2,000 head) produced on a three month feed regime (meaning a substantial total turnoff of 8,000 head per year). Households sold cattle through the co-operative, on a loose verbal agreement, to a nearby (Malaysian-invested) joint-venture food company and the remainder to large abattoirs near Beijing. While some of the functions of the feedlot were collectivised, households (co-operative members) retained a high degree of autonomy⁶⁸. Many feedlots in China are collectively run and these organised in a range of ways. In Weichang County, Hebei Province, governments of 10 villages and one township had invested in a large and well-run feedlot. A number were owned by collectives and a few private shareholders. Many former collectives had taken over by individuals, who tended to be officials or former officials that leased land from the village.

While a number of cattle-producing co-operatives are said to exist in Shandong Province, co-operatives appear to account for a very small proportion of the cattle turned off China. Co-operatives are said to be more prevalent in Shandong than other provinces which, significantly, is the most agro-industrialised province in China⁶⁹.

- b) **Provision of financial services (*jīnróng fúwù*).** Functions of credit co-operatives include capital accumulation, provision of credit and loans and provision of insurance. Interviews conducted indicate that the inability of individual households to access to financial services of existing institutions (credit co-operatives or regional branches of the China Agricultural Bank in particular) act as a major restriction to the expansion of household activities. Co-operatives provide an alternative means of establishing small-scale insurance and loan schemes. They can either accumulate funds through member contributions or, as a co-operative, come to arrangements with other bank and insurance institutions. These activities would be expedited if co-operatives could establish a recognised legal status⁷⁰.

⁶⁷ Wangzifu Sub-district (xiaoku), Xiaofu Natural Village, Anren Town, Yucheng County, Dezhou Prefecture, Shandong Province. Shandong Province has the highest concentration of co-operatives in China (Yuan, personal communication).

⁶⁸ Experts come every month to train households in production practices. 100 people within Xiaofu village undertake correspondence through the China Farmers (*nongmin*) Correspondence (University?). Shandong Academy of Agricultural Science and Shandong Agricultural University visit and collect data in exchange for some guidance. Presumably because discounted prices are not given for bulk purchases, or because members do not want to complicate management, farmers purchase feed themselves. A large underground concrete straw treatment pit was built. The 40 households buy feeders at markets and feed them at the centralised feedlot. The households can sell their interest when they want and other households can construct facilities on available land if they want. All households are supposed to feed according to the regime developed by the amalgamated feedlot committee. The committee also sets rules on health standards. The committee consists of 5 members, Mdm Ma is the committee head and manager. The other 4 are chosen on account of their expertise and, in particular, marketing channels (contacts). The committee organises collective input purchases and sales channels for fattened cattle. It does not have transport facilities – trucks are leased and 4 households with interests in the feedlot own trucks. It was emphasised that the committee does not exact any fees from households for such services or for the construction of collectively used facilities. On the board of the feedlot office were a series of regulations which said that if new households invested through a loan, 2% was to be paid to the committee and 20% was payable if a household invested cash. The manager said that the committee can arrange loans of 0.1% per month (where the bank rate is 0.128%).

⁶⁹ The most intensive cattle-production region in China – Fuyang Prefecture in Anhui Province – is also an experimental site for the establishment of share-holding co-operative enterprises (see above (footnote ...) for explanation and reference).

⁷⁰ Liu (personal communication) said that credit co-operatives are proliferating in China but, in some areas, are restricted by officials partly to maintain the role of the existing credit co-operative system

The provision of financial services through co-operatives is applicable to the cattle and beef industry by either: i) co-operatives providing financial services to cattle-producing households or; ii) cattle production co-operatives (above) and ‘downstream’ co-operatives (below) adding finance to their range of activities. Regarding the cattle industry (above), cattle-producers are generally low risk borrowers. First, cows can produce an income-earning calf every year if sound production practices are used (in many areas in China average calving cycles are closer to 18 months)⁷¹. Second, prices for dead cattle are nearly as high as those for live cattle. Many officials also say cattle in China are less susceptible to fatal diseases than are other livestock. This not only makes cattle-production a low-risk activity but also reduces the need for insurance services. Provision of finance outside existing channels is required for households to become more specialised in cattle production. Regarding the beef industry (below), because small-scale slaughter units and beef distributors can generally out-compete abattoirs on price grounds, they also make good credit risks. This is particularly the case if they can upgrade facilities to produce hygienic, mid-quality beef and if they have strong distribution networks or forward sales contracts in place. Credit is required by small-scale slaughter and distribution units if they are to continue to operate after regulations aimed at ensuring beef hygiene are put in place⁷². Financial services are rarely provided to or by small-scale groups in active in the cattle and beef industry. One exception is that a number of abattoirs and food companies arrange credit from the company itself or through banks for contracted cattle-producing households. Organisation of households into co-operative would also help profits to be returned (*fanhuan*) into the co-operative for future investment rather than into unproductive activities⁷³.

- c) **‘Downstream’ market segments.** This includes groups that are involved in slaughter, processing, distribution and sales activities in the beef and offal sectors⁷⁴. Individual households dominate these sectors but, as stated above, only in low-value market segments and tend to be dispersed (*fens*), co-ordinating through loose alliances with separate households in the marketing chain. This system is effective in so far as households make profits and satisfy market demands. However, organisational changes will be required if households in these ‘downstream’ segments are to move into the growing mid-level beef markets, if they are to integrate and co-ordinate more effectively, and if they are to survive imminent regulatory changes. These will designate places in which cattle can legally slaughtered and [according to all officials interviewed] will not include individual households.

Some households groups are already active in multiple sectors of the beef and offal sector throughout China. Lin (1997, 3-4) documents some examples. In Changtu County (Tieling Prefecture), Liaoning Province, individual slaughter households have established 126 vendor stalls (*tanchuang*) in nearby county level cities. Some have combined (*lianhe*) to expand beef production in large cities. For example in Hebei Province⁷⁵, a farmer established relations with three markets in Shanghai. Cattle

⁷¹ A large number of micro-credit programs (the Heifer Program and others organised under the Gramin Bank model) include cattle producing activities in programs. are operating in China. Cattle production activities in programs. Cows are passed between households after giving birth to calves and heifers are kept for further production and males are sold to contribute to household income. On a different point, a system exists in China where, at the village level, poorer households are provided with loans, advice and technical help by richer households. The system is administered by the CCP at village level and Party members are the main ‘patrons’. In regions visited in Fuyang Prefecture, Anhui Province, cattle-production was the major economic activity by which this system was implemented.

⁷² Better slaughter floor and cold storage facilities and, less importantly, refrigerated vehicles are required.

⁷³ A number of specialised households or business people had earned significant profits from feeding and slaughtering activities, some in poverty-declared areas. Some of these individuals were excellent cattle men that had used expertise to make profits mainly from trading. Others had moved up the marketing chain from cow/calf production to feeding, to trading and into slaughter activities, regarded in some areas as the most profitable or reputable business to be in (in the local cattle and beef industry). Others were simply well-connected, particularly the officials or local officials. The construction of large and expensive villas tended to be the preferred use of profits. These rich individuals would not necessarily want to establish or join a co-operative, even if that entailed benefits for the community.

⁷⁴ The hide processing sector is subject to regulations restricting the sector to companies that process more than 30,000 hides per year. Similarly, households can not effectively compete in gland processing for medicinal products. Households – some that evolved into TVE’s – are active in sectors like bone processing, glue production and leather garment manufacturing but are not considered here due to space restrictions. Some companies involved in food processing – sausages, beef jerky etc. – are privately owned and started at the household level. There is no reason why co-operatives could not move into these sort of activities, perhaps by evolving into shareholder companies.

⁷⁵ [Zhunyong] County, Doumen [Township], Guying Village

killed are on average more than 450 kilograms liveweight and the householder sells 119 tons of beef through this channel, earning profits of Rmb145,000. In various regions of Shandong Province, a number of Hui households within the same administrative villages combine to slaughter and distribute beef. The village sold beef (and also goat meat) to Beijing and Tianjin through Hui traders. It can be regarded as a specialised Hui slaughter village and is structured as a shareholding company with five shareholders. These are relatively common in the region⁷⁶. Lin (1997, 203) says that “sales and marketing co-operative organisations (*yingxiao hezuo zuzhi*) are, in the cattle, beef and milk industries, already developed in some areas”.

Examples provided above show that various organisational forms in which households participate are involved and can integrate in a range of ‘downstream’ industry segments on commercial grounds. Some of these arrangements could be transferred and carried out by co-operatives. Co-operatives might also prove necessary if households are to continue roles in the slaughter sector. Regulations to ban household slaughtering (for hygiene reasons)⁷⁷ are in place in some regions, are imminent in others but not likely to be enacted or enforced for years in other regions. As a result, slaughter will take place in abattoir facilities (unused capacity in the state-owned General Food Company structure will be more fully utilised) or at ‘designated slaughter points’. Plans appear to be for ‘designated slaughter points’ to be administered by a range of relevant local government departments. In Changchun, a company (called *Haoyue*) will manage ‘designated slaughter point facilities on a service slaughter basis. Unless households co-operate to establish and manage their own ‘designated slaughter point’ facilities that conform to hygiene standards and are able to kill large numbers of cattle, they will not be permitted to slaughter⁷⁸. The slaughter would be the exclusive domain of companies (as it is Western countries). This would increase significantly rural unemployment in some regions, involve consequences for the socio-economic roles of the Hui minority throughout rural regions of China and, in some regions, displacement of Hui people that have moved to specific villages to slaughter.

3.8 Problems associated with a ‘bottom-up’ model of agro-industrialisation.

- a) **Attitudinal and organisational problems.** The development of a vigorous genuine co-operative economy requires a large transformation – perhaps more in attitude than structurally (as outlined in 3.5, similar economic structures already exist). Both farmers and officials generally do not, at present, want to become involved in co-operatives. This will take many years to change, if it does at all. Given the urgency with which agro-industrialisation measures are planned for realisation, this constitutes a problem. Moreover, a good deal of experimentation will be required. The experience of and models used by Western co-operatives are certainly not directly transferable to China because of socio-economic and political differences and the structure of the Chinese rural economy⁷⁹. China also lacks experience in running democratic institutions and co-operatives (under one person one vote principles)⁸⁰. For these reasons, it might be more realistic to base a ‘bottom-up’ agro-industrialisation strategy on existing organisational structures (shareholder companies, TVE’s, collectives, specialised villages and, in particular, specialised households). In this case, individuals (householders, businesspeople and officials), rather than groups, make key management decisions and seek to integrate industries. For the same reasons, a ‘corporatist’ approach (where businesspeople and

⁷⁶ The specialised slaughter village referred to was in Houji Town, Cao County. The initial investment was Rmb 800,000 and slaughtered 25,000 goats and 2,500 head of cattle. The collective appeared to operate profitably. In the region there were six (integrated) slaughtering and cold storage enterprises. One of these is a collective and the others are shareholding companies. These 6 enterprises slaughter in total about 8,000 head of cattle and combined cold storage capacity of 500 ton. Beef marketed to Northeastern markets is low grade and therefore not sold into the restaurant and hotel trade. A collective abattoir in a remote village in the Inner Mongolian Autonomous Region targeted higher value markets, partly because it had slaughter line rather than simply hooks in a room like the slaughter villages in Shandong.

⁷⁷ Officials want to guarantee the production of ‘*fangxin rou*’ (rest-easy meat)

⁷⁸ Officials interviewed state that the main reason for banning household slaughtering is that local inspection bureaus (under the Bureau of Internal Trade and the Ministry of Agriculture) lack the administrative capacity to inspect numerous, highly dispersed households. If so, there should be no reason why households could not continue to own and manage centralised, large-scale slaughter facilities with the status of a ‘designated slaughter point’. These would probably not be abattoir (slaughter line) facilities but would certainly meet the quality standards of the mass and, if run well, could be the basis on which market niches could be developed.

⁷⁹ The World Bank is involved in a number of programs to develop co-operatives. An Israeli organisation is transferring the Kibbutz model to one region in China

⁸⁰ It is very telling that the common / root character for ‘rights’ (*quanli*) is the same as it is for ‘power’ (*quanli*).

officials make key decisions that effect the industry concerned) might also be a more realistic and implementable model for agro-industrialisation.

- b) **Economic Problems.** The lack of capital formation at the grassroots level and access to credit through banks and credit co-operatives acts as a major constraint to the development of 'bottom-up' organisational forms. Uncertain market conditions in the cattle and beef industry makes investments by households adds risk to the formation of co-operatives. Cattle and beef markets are largely undeveloped and undifferentiated making the pursuit of market niches problematic. Under current conditions, the formation of specialised co-operatives to target mass cattle markets is almost certainly uneconomic, partly because it entails direct competition with individual households that keep cattle mainly for draught purposes. Co-operatives targeting existing high and mid-grade slaughter cattle markets would seem to be most viable. Formation of co-operatives to target mass beef markets would seem to be rational mainly as a response to forthcoming regulatory changes. The high and mid-level beef markets will take many years to develop and even then are uncertain. Although households have lower costs structures, targeting this beef market entails competition with an oversupply of larger, often subsidised abattoirs with better facilities. There will also be challenges for many farmers to anticipate market changes based on incomplete market information, use advanced production and processing techniques, engage in group management decisions which can become unwieldy and to integrate in a marketing chain in what is a sophisticated industry.

Conclusion

For the purposes of analysis, a simplified structure was used to highlight different agro-industrialisation strategies. In reality, the complex organisational structures that make up both 'top-down' (or 'corporatist') and 'bottom-up' (or 'household participatory') structures will all play roles in a range of market segments. It is conceivable, for example, that companies will develop closer relationships with and become more mutually dependent on co-operatives. This seems appropriate but only partially a result of policy design.

This paper generalises that planners of the cattle and beef industry began industry development by emphasising the role of households in cattle production. With the introduction of the agro-industrialisation concept, industry development plans have changed to focus on the role of enterprises in value-adding and processing activities. Households have not been encouraged to participate in industry functions except in their original role as cow-calf producers. In Chinese terms, companies are 'encouraged' (*zhichi*) both lead (*daidong*) the agro-industrialisation process, and fill central roles (*zhongjie*) in the marketing chain. Companies are likely to dominate premium and export beef markets. This is an understandable, realistic and, in some ways, appropriate response to the demands of an increasing modern, commercial and internationalised agricultural sector. This paper indicates, however, that an agro-industrialisation strategy based on appropriate scales and scopes of development would place more emphasis on the role of households in a wider range of market segments, particularly in mid level beef markets. In addition to the obvious area of cow-calf production, a more balanced strategy would encourage households to participate in the fattening sector, to manage designated slaughter points when regulatory changes are implemented (rather than companies) and encourage Hui minorities in particular to continue to utilise existing distribution and retailing networks. Under this strategy, households would also be encouraged to organise into group structures – co-operatives in particular – to participate in these functions (at a minimum), but also other market segments. There are a number of reasons: i) because the beef market is undeveloped and has an uncertain future; ii) because high socio-economic costs are involved if enterprises are to dominate all but the most basic industry functions, and; iii) because many corporations targeted by government are over-capitalised and commercially unviable under current market conditions.

Western models of agribusiness reform are not necessarily directly transferable to China. However, an argument could be made that government should adopt a role closer to that of Western countries. That is, instead of investing in and subsidising enterprises in a bid to 'fast-track' and integrate an industry with an uncertain future, it should perhaps aid enterprises to do this on a more independent basis. This could include activities like the development of nation-wide beef grading standards, by collecting and providing public market information, by undertaking inspection procedures on a stricter basis and by encouraging regions to act on the basis of comparative advantage (rather than replicate industry plans and compete

directly on an inter-regional basis). On the other hand, 'fast-tracking' policies aimed at 'creating' a commercialised industry that bring about significant 'public goods' are laudable if effective. In this case, market development measures – including government participation in beef promotion campaigns – would seem to be important. In recognition of the 'public good' (including rural development) characteristics of the industry, continued provision and subsidisation of services aimed at improving cattle production (including extension, breeding and straw treatment programs) seem appropriate.

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⁸¹ This bibliography is an incomplete list of the written material read for this paper although some works are not cited in the text. For convenience (of translation from the original form) Chinese references are stylised in ways common in China. Again, literal rather than smooth translations are provided to give English-language readers and understanding of the way terms are expressed and, inter-connectedly, ideas are thought about in China. The term 'wenji' is translated as 'issue' but can also be translated as 'problem' or 'question'.

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