**Has Risk Society come to China?**
**Food safety and risk perception gaps in food safety control systems**

**Thesis Master Asian Studies, Politics, Society and Economy**

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## Introduction

There is an old and popular Chinese saying which expresses the importance of food for Chinese people: 民以食為天 (*min yi shi wei tian*). It means that people regard food as their heaven; their primary requirement. China's relationship with food is a complex one, ambiguous at best. After a long history of struggling to provide for the Chinese population, the country finally achieved self-sufficiency after 1995,[1] and from that point it went on to become the largest producer and consumer of food in the world [2] and a major player in the global food supply system. Within the past three decades, the Chinese food system has evolved from a state-regulated system, in which season, geographic location and regional taste determined the supply, to the current modern market food supply system, in which a wide variety is on offer all year round, and consumer demand and global market forces determine the supply. Reform, privatisation and individualisation appear to have led to responsibility for food supply being distributed between the State, the food industry and consumers.[3]

This rapid transformation of the food infrastructure poses many challenges for the implementation of an effective domestic food safety system. Records of food safety issues in China can be traced back to the middle of the last century, however, until the end of the last century at least most of those issues could be categorised as conventional risks attributable to lack of knowledge and often concerning failures in food processing hygiene.[4] Since roughly the beginning of this century, Chinese society has been plagued by new types of food safety problem, involving unsafe foods and poisonous foods. These are foods contaminated due to excessive use of chemical fertilisers, pesticides, hormones, steroids, preservatives, flavour enhancers and colorants (among other things), and manifest as a global phenomenon resulting from modern farming and food processing technologies. A common characteristic is often deliberate, profit-driven contamination.[5] One of the earliest severe food safety incidents in China to receive national media coverage was that of the poisonous Jinhua ham in 2003, in which several small producers continued to produce Jinhua hams out of season, and soaked the hams in pesticide to prevent spoilage and insect infestation during the warmer months.[6] In the past fifteen years, several large-scale food safety problems have materialised in China which have led to nationwide and even region-wide food scares affecting large groups of people in society, and resulting in widespread consumer concern and a mistrust of domestic food

[1] Bian 2004, p. 2.
[2] Wang 2013, p. 114.
[3] Klein 2013, p. 378.
[4] Yan 2012, p. 709.
[5] Yan 2012, pp. 714-717.
[6] https://en.wikipedia.org/wiki/Food-safety-incidents-in-China (accessed 16 March 2016)

production. What these extensive food scares have brought to the surface is that this is a structural problem, a system failure involving not only producers, but also government institutions and officials at different levels.

German sociologist Ulrich Beck argues that according to his theory of 'Risk Society',[7] the food safety problems in China are especially complex because China's non-democratic political system obstructs public reflexivity.[8] Furthermore, China is going through a 'compressed modernization',[9] combining a largely industrial state with elements of a post-industrial state, and therefore presents a mix of different types of risks.[10] Beck calls for shared responsibility and the opening up of policy making to greater levels of public accountability.[11]

Since the outbreak of several major food scares in China in the early 2000s, the subject has attracted the attention of scholars, and has been a topic for research and analysis. Scholarly attention has been concentrated on the analysis and critique of the Chinese government's development of a legislative and regulatory framework for food safety since the reforms of the 1980s. There is some literature on the response of Chinese consumers and their expectations for food safety control systems, and this largely blames the food processing industry and looks to the government to legislate for adequate food safety and quality control.[12] There are fewer academic studies which examine food safety infrastructure and the division of responsibilities in the food supply chain from a production-level perspective. In my opinion the current literature presents a rather one-sided and ambiguous picture of the State/private industry nexus underlying Chinese food infrastructure. On the one hand, it presents a retreating state in a rapidly transforming supply chain; a state which is clearly designating responsibility to the food industry as a natural consequence of decades of deregulation and privatisation of the market.[13] On the other hand, the literature presents a state which interferes directly in the food supply chain at the expense of market mechanisms, and implements an increasing number of policies which more specifically define state control at all levels of governance. This ambiguity and one-sided point of view demands further inquiry into the development of state control versus self-regulation in the food production industry. This will help to determine whether a diffuse division of responsibilities may point to risk perception gaps in Chinese food safety control systems which could account for the deficiencies in the system.

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[7] Beck 1992; Many of Beck's ideas were - although with different nuances and perspectives - developed in the same period by Anthony Giddens (for example in his book of 1990 'The consequences of modernity') and by Mary Douglas (for example in her book of 1985 'Risk acceptability according to the social sciences').
[8] Thiers 2003, pp. 243-244.
[9] Compressed modernization in contrast to Western gradual modernization, Yan 2012, p. 706.
[10] Beck, Deng, Shen 2010, p. 208; Yan 2012, p. 706.
[11] Yates 2003, p. 106; Beck 2000, pp. 226-227; Thiers 2003, pp. 242-243.
[12] Ortega et al. 2011, pp. 319, 323; Yan 2012, pp. 717-718.
[13] Food Safety Law 2009, article 3; responsibility is also assumed by leaving out specifications of many articles.

This paper offers an initial insight into the way in which Chinese food processors perceive the development of state influence in the food supply chain, and of the State's legislative and regulatory regime. In other words: how is the rapid transformation of the food supply chain and the continued state reform of food regulation shaping the relationship between the State and the private food processing industry, and how is this affecting food safety control systems from the perspective of the food processors? This paper addresses an interrelated set of questions: what is the nature of the development of the Chinese food supply chain? Is it fragmented; lengthening and becoming more complex, or is it shortening; scaling up and becoming more efficient? How are distribution channels evolving and what is the role of the Chinese consumer? What is the level of state control and ownership in the food chain? Is it clear at production level what production requirements and quality standards must be complied with, and is there regular contact with government officials at this level? Is the private sector involved in the continuing regulatory improvements and what is the role and importance of industry associations? Do they, as in Europe, serve as independent intermediaries between the State and the private sector?

The main finding of this exploratory work is that, according to Chinese food processors,[14] there is no ambiguity about the State's strategy of control of the food supply chain, and nor is there any confusion about the legislative and regulatory regime. Furthermore, the food processors' overall opinion of the government's strategy and step-by-step approach to the development and improvement of food safety control systems is rather positive and does not point to major differences in the perception of risks between the State and the private food processing industry. My argumentation consists of four parts, and starts with the premise that in the process of the rapid transformation of the food supply chain and the diversification of distribution channels, the State is maintaining firm control, both directly and indirectly. In particular, the government is managing the development of the supply chain carefully, is in charge of the direction of national industrial development, and gives priority to sensitive and key industries in order to secure food supply and increase food quality and safety. The second argument contradicts current literature which critiques the so-called fragmented and segmented model of regulatory authority which causes overlaps, gaps and inconsistencies, as well as leading to a lack of clearly defined responsibilities and quality and supervision standards. My research presents a rather different picture: the framework is clear and transparent, responsibilities are defined at all levels, and the private sector is involved in policy making in several direct and indirect ways. This is not to say that the industry sees no deficiencies in the

[14] NB. The Chinese processors involved in this exploratory work are all professional, fully compliant, urban-area players in the food industry.

current system. The third argument illustrates that, although industry associations in China operate – as they do in Europe – as two-way intermediaries between the State and the private sector, they are not independent. On the contrary, they serve as semi-official institutions which facilitate private businesses and complement the official regulatory 'window'. Finally, I raise doubts as to whether Beck's plea against the logic of control in a 'Risk Society' is applicable to China. China is following a different path towards modernisation, combining a compressed modernisation process with a change from a state-planned economy to a largely market-based economy. Risk Society has come to China in the sense that Chinese society is also exposed to 'manufactured' risks, such as ecological crises, food safety scares and the global financial crisis; all hazards caused not by nature or other external forces, but rather by the products of modernisation.[15] The current reality in China, however, is that key stakeholders in the food supply infrastructure are not blaming these risks on the failure of government institutions. On the contrary, they are sufficiently content with – and even encourage – the logic of control employed by the State. The above mentioned four arguments will be discussed in the next four sections. Each section will start with a brief review of current academic literature and theory, followed by the findings of my research.

My research is based on an exploratory two-step approach. The first step, conducted in the Netherlands from April until mid-May 2016,[16] is aimed at gaining a better understanding of the structure of the food supply chain and the food processing companies' relationship with the State in China through interviews and contact with specialists in the field. This served as preparation for the second step, conducted in the second half of May 2016,[17] which consisted of on-location inquiry with food production companies in the Shanghai region and Jiangsu province, to allow for observation of and direct input from the perception at production level of food regulation reform, and how it is shaping state/private sector responsibilities and relationships. These on-location interviews in China were arranged with difficulty; illustrative of caution on the part of food processing companies and of the sensitivity of the subject. The interviews were partly conducted in Chinese. Key areas of investigation were food supply chain development, the development and enforcement of food regulatory reforms, and the role of industry associations, in order to assess the perception at production level of the state/private control axis in the food safety control regime, and how this affects the level and nature of risk in the food supply chain. The small scale of this research and the broad scope of the industries

[15] Beck 1992, pp. 2-3, 183.
[16] Details of study set up and list of contacts of research step one in Appendices.
[17] Details of study set up and list of respondents of research step two in Appendices.

incorporated allow only for indicative results, and more quantitative validation will be required before it will be possible to draw conclusions. In addition, a sector by sector approach would be advisable, since the food industry in China is, as it is elsewhere, both vast and diverse, the development of the sectors is divergent and incorporates many different kinds of problem.

## Development and control of China's food supply chain

Along with the extensive economic and social reforms which have effected a shift from a centrally planned to a market-based economy since the end of the 1970s, China's food supply system has also undergone comprehensive changes. The lengthening and increasing complexity of the food supply chain is often mentioned as a cause of persistent food safety problems.[18] Current literature does not present a clear picture – indeed it could sometimes be seen as ambiguous – of how the food supply chain is developing or of the interaction of key stakeholders in that development. My exploratory research indicates, however, that the State is retaining firm control of the development of the food supply chain in direct and indirect ways deemed necessary, at least for now, by consumers and processors alike to secure food supply and increase food quality and safety in a supply chain that is still in the process of transition. This section will look at the following questions: what is the nature of the development of the Chinese food supply chain? Is it fragmented, lengthening and becoming more complex; or shortening, scaling up and becoming more efficient? How are distribution channels evolving and what is the role of the Chinese consumer? What is the level of state control and ownership in the food chain? The first part of this section will review the literature on the transformation of China's supply chain; the second part presents my research findings, concentrating on the question of the level of control and interference by the State in the development of the food supply chain.

### *The transformation of China's food supply system and its impact on market and consumer*

According to Veeck et al.[19] we can roughly divide the transformation of China's food supply system into three periods. First, the period from 1949 to 1979 can be characterised as one in which the selection of food was very limited, the State controlled the entire food supply chain from farm to table, and consumer purchasing behaviour was either determined by domestic

[18] Wu, 2012.
[19] Veeck et al. 2010, pp. 224-225.

cultivation, farm markets or state issued food rations. For many Chinese this period is synonymous with a monotonous diet, malnutrition and famine. During the second period, from 1979 until the mid-1990s, land reform, de-collectivisation and privatisation had a major impact on the food supply system, and resulted in increased variety, the extension of seasons due to irrigation and fertilisation, improved production efficiency, higher quality and more innovative products, and the emergence of specialty food outlets started by entrepreneurs (e.g. bakeries, poultry stands, small grocery stores) alongside traditional food markets. The third period, from the mid-1990s up to the present, is significant because of China's engagement with regional and global economies. International production companies and food retailers now complement domestic supermarket chains and wholesalers in Chinese cities. Packaged goods of all kinds have emerged on the shelves of Chinese stores, along with branded products, chilled and frozen products, and certified products such as green and organic produce. One-stop shopping has been added to the traditional food markets and the specialty stores. The whole spectrum of food retail outlets in China now ranges from traditional farmers' markets (morning markets), traditional covered food markets, specialty stores, supermarkets, hypermarkets and department stores.[20] Most recently, online retail has been added to this mix, and with an annual growth of 50%, (sales of fresh food now make up 12-13% of online sales) e-commerce is becoming one of the main channels of food distribution.[21] Veeck et al. sums all this up as follows: 'The once strongly regulated food system is now subject to the competing interests of farmers, manufacturers, and retailers in a "socialist market economy"'.[22]

This rapid transformation of the food supply system influences how Chinese consumers perceive the benefits, and also the risks, involved.[23] Research conducted in five major Chinese cities (Beijing, Nanjing, Changchun, Shijiazhuang and Kunming)[24] confirms that consumers greatly appreciate the increased variety of outlets and the opportunity this offers for personal choice and convenience, but feel that privatisation of the food system has developed too quickly for the government to be able to regulate it adequately. There is widespread mistrust of profit-driven food producers and vendors, who are the main culprits in the current food problems in the eyes of consumers. The variety of food products now available to Chinese consumers thanks to market-led food supply is welcomed by all, but the selection of safe and affordable food of good quality takes care and time; in other words, food shopping has become a 'risky business'. The delocalisation of the food supply, i.e. the de-linking of consumers from

[20] Veeck et al 2010, p. 226.
[21] Joint project Wageningen University 2015, pp. 13-14.
[22] Veeck et al. 2010, p. 222.
[23] Veeck et al. 2010, p. 225.
[24] Klein 2013, pp. 381-389; Veeck et al. 2010, pp. 228 - 232.

the place of origin, and the lengthening of the production chain,[25] are a cause for concern to many consumers, and have led to an atmosphere of anxiety and mistrust. This affects consumer behaviour in many ways, from selecting only trusted suppliers to visiting rural out-of-town farms to buy produce at the weekend.[26] On the other hand, continuing urbanisation, rising income and the accompanying improvement of living standards also exert a constant pressure for a greater variety of value-added products.[27] According to research, the Chinese consumer has the most confidence in government-run certification programmes, and prefers direct government involvement in food safety over other market options.[28]

The rapid transformation to an increasingly liberal market economy, combined with a re-engagement with the global economy, has offered the food industry opportunities which were formerly unimaginable, and has resulted in the unprecedented and often unregulated growth of processors and producers in the food supply chain.[29] In primary food sectors such as the dairy industry, the privatisation of state-owned companies has led to the establishment of a large number of small-scale private dairy farms and processing facilities. Encouraged by the State, and sponsored by international donors, milk production has increased considerably.[30] However, this has also resulted in a fragmentation of production in the supply chain, and efficiency and quality standards have not been maintained. Quality problems are illustrated by an example by Pei et al: an analysis carried out after the 2008 Sanlu milk scandal resulted in the immediate closure of 4,000 of the 20,393 milk collection stations 'due to substandard operating conditions or the lack of the right equipment or sanitary conditions'.[31] On the other hand, the literature indicates that the State is still interfering directly and indirectly at a central and local level, rather than allowing for private investment and a market mechanism. Hidden local subsidies and relationships obstruct the transparency of the market and counteract central policies. In this way, international assistance such as the China-EU Dairy project (1996-2001) has failed to be sufficiently effective. This is indicative of a state primarily focused on growth, reluctant to give up control, and unable to manage the transition from central to local policies.[32]

To summarise: a review of the literature points to a rapid transformation of the food system in which the supply chain has lengthened, has become increasingly fragmented and complex,

[25] Wu 2012, p. 1.
[26] Klein 2013, p. 387.
[27] Liu et al. 2013, p. 94; Gale and Huang 2007, p iii.
[28] Ortega 2011, p. 323.
[29] Breslin 2013, p. 157.
[30] Delman 2003, p. 6: for example, the dairy cow population grew 10-fold, from 0.5 million to 5 million, between 1979 and 2000; Internal note 2013, p. 11: China's domestic milk production grew between 2000 and 2007 from approx. 10 billion to more than 35 billion liters.
[31] Pei et al. 2011, p. 418.
[32] Delman 2003, pp. 10-11, 13, 18, 26.

and has distanced consumers, who mistrust profit-driven food processors. The State, as third key stakeholder, is portrayed as simultaneously retreating and maintaining control in the development of the food supply chain.

*Food supply chain: direct and indirect interference by the State*

There is no doubt that the rapid transformation of the Chinese economy, urbanisation and the rising living standards of the Chinese have had a major impact on the food system. What is not clear from the currently available literature is to what extent the State is adopting a strategy of less control and less interference in the food supply chain. What is the direction of their strategy?

The first part of my research supplied several insights into the primary food sector: the agribusinesses in food supply, such as dairy, meat and poultry. In China, these food industries are characterised by a fragmented supply chain consisting of numerous very small and inefficient players at all stages of the chain, but nevertheless still accounting for a considerable part of the business.[33] While, in the 1980s, the State was encouraging the replacement of state-owned farms by small-scale farming in order to bring about a rapid increase in output and supplement farmers' incomes, more recently – and especially since the 2008 melamine crisis – the State has been actively pushing for the up-scaling of farms and the phasing out of some steps in the chain; in other words shortening the supply chain. For example, the Chinese government has developed a Master Plan for China's Dairy Development (2009-2013)[34] which aims to scale farms up, phase out milking stations to shorten the dairy chain, and improve quality control and traceability in the dairy sector. One of the accompanying regulatory changes is the introduction of a licensing and review system for milk collection. In dairy production, licenses will only be renewed for processors of milk and infant milk formula if they have advanced equipment for self-inspection across a wide range of food additives.[35] The influence of the State is also noticeable in the interference in business and investment models in the dairy industry. The industry is experimenting with different vertical integration and clustering models, but the State is clearly only supporting the larger-scale models with land and finance.[36] However, my contact acknowledges that reforms in the chain must be carried out gradually, since the demand for milk products greatly exceeds supply in China, and the employment of a

[33] Contact C. Internal note 2013, p. 1. gives an example of the Dairy industry: farmers with less than 100 heads account for about 60 percent of the supply.
[34] Internal note 2013, p. 7.
[35] Internal note 2013, p. 3, 7; confirmed by Contact C.
[36] Internal note 2013, p. 4; this point was confirmed by Respondent I in the second phase of research.

large part of the population is involved.[37] A similar development is visible in the pork and poultry industries,[38] where the State is also encouraging vertical integration and the clustering of steps in the supply chain in order to secure food supply and improve quality. Although private corporations are expanding, the State continues to play a central role in determining the course of market expansion and the destination of profits. State and private elites are cooperating to lead agrarian transformation, but it is the State that is inviting parties to the table and appointing the major agents who then become part of a state-led political project serving modernisation goals at a national level. [39] Some interviewees[40] expressed understanding for this strategy, and remarked on the lack of responsibility still displayed in many parts of the food industry, and originating either from lack of knowledge or a different mind-set. Another point emphasised[41] was that the Chinese food industry is not yet accustomed to a so-called 'pre-competitive' form of cooperation: players (i.e. competitors) in the same food sector cooperating to improve quality, safety and innovation in the sector as a whole with the idea that all parties involved will benefit. This form of cooperation is evident in many Western food industries, as well as being apparent in the role and importance of industry associations.

The food companies interviewed in the Shanghai region and Jiangsu province in the second step of my research[42] confirm the continued firm state control described above. They also express the understanding that this is currently probably the best way forward, and even advocate a harsher 'no tolerance' strategy. As one respondent put it: 'It is important for the government to be strict on the small things, not wait until it becomes a big issue'.[43] There are many examples of continued or even tightened state control in agribusiness, particularly in the dairy sector. The State has openly communicated its objective of bringing down the number of milk powder processors – particularly those processing milk powder for infants – drastically in order to improve food safety control. Various numbers were mentioned, but it would appear that the plan is to cut the number of processors by at least 50%, not by allowing market mechanisms to work, but through direct interference by the government.[44] One of the new measures being implemented is the requirement for milk powder processors to combine the process of spray-drying the raw milk, mixing and packing in one facility.[45] The policy requires

[37] Contact C; Internal note 2013, p. 10.
[38] Schneider 2016, p. 1; to give an impression of the magnitude of the pork business in China: "China is home to half of the world's pigs, half of global pork production and half of worldwide pork consumption". In 2014 the number of pigs in China totaled 770 million head.
[39] Schneider 2016, pp. 4-5.
[40] Contact C, confirmed in the second phase of research by Respondents I, II, III, IX, X.
[41] A point made by contact C, in the second phase of research confirmed by respondent I and X.
[42] Respondents are not mentioned if subject or statement is possibly sensitive.
[43] Expressed by respondent II.
[44] Respondent I, VIII, X.
[45] This new policy was explained by respondent I.

this measure to be effective within one year, and aims to phase out the large number of processors who only mix sourced powdered milk. Among this type of processor/mixer there are a number of major players, but also a great many small players, who are suspected of being the cause of the persistent problems with milk powder. However, one critique heard[46] is that this measure is not feasible, because it will not be possible for the larger players in the market to rearrange their entire production process within a year. Furthermore, up to now the number of dairy processors that have actually been closed down is low due to the previously mentioned issue of enforcement at a local level and the importance of local employment. The government is therefore attempting alternative measures, and is currently closing the back door, requiring the central (CFDA, Beijing level) registration of all milk powder and infant milk formula recipes.[47] This is also aimed at phasing out small players in particular, as well as at preventing new ones from entering by raising the entrance level standards. Small players[48] currently often use the same recipe for different products in different channels, something else which this regulation aims to prevent.[49] In addition, the State has recently issued a policy regulation limiting each production site for infant formula to producing only three brands, with a total of nine recipes; all regulations aimed at improving the State's ability to control the process. One respondent from the field of packaged goods and value added foods[50] confirmed the continued state control, and offered as an example a method used by the State in the packaged goods sector. In the respondent's line of business this is apparent in the imposition of increasingly high production requirements, especially capital intensive hardware requirements, which make it virtually impossible for small players to obtain a production license for food processing, or to stay in business when the renewal of the production license is due after three years. However, this person also noted, as mentioned above, the hesitation at local level to actually close down businesses, especially at a time when the economy is slowing down.

Other evidence of tightening state control was given by a respondent who had gained access to a Chinese government document outlining development and reform strategies for industry in a number of decrees effected in May 2013.[51] He mentioned the decrees regarding the minimum sizes for companies producing rice and soy bean that were to be allowed to remain in business and for smaller businesses which would be required to upscale to avoid closure. Upon request,

[46] Respondent I.
[47] This point and the next were made by respondent I and VIII.
[48] Small players usually do not have a processing facility themselves but mix sourced raw materials, i.e. milk powders.
[49] Explanation by respondent VIII.
[50] Respondent IX.
[51] Respondent X.

the Chinese document was supplied.[52] This contained the following other interesting insights into the State's strategy for food production companies.[53] The document contains three categories of measures: encouraging measures (鼓勵類), restrictive measures (限制類) and elimination or selection measures (淘汰類).[54] The first category of measures involves the overall development and application of standardisation and the cultivation of good quality, larger scale and efficient technology (优质、高产、高校标准化栽培技术开发与应用) as well as high speed manufacturing lines in food industries (高速食品饮料制造生产线).[55] Furthermore, there is an 11 page list of all kinds of production machinery to be encouraged above a certain capacity in order to increase efficiency and the level of innovation.[56] The general content of the second category of measures includes a limitation on machinery under a certain capacity,[57] as well as environmental and safety matters. The third category urges the replacement of outdated production equipment (落后生产工艺装备） in all industries. In the light industries, the document calls for the replacement of industries with a relatively low production capacity, such as salt production, soft drink bottling and cornstarch production, and the shutting down of all manual butchering of live animals（猪、牛、羊、禽手工屠宰工艺）.[58] All examples are illustrative of the continuation or even tightening of state control in industries rather than of a shift to control by market mechanisms.

Even though many of the examples given in this paragraph concern the primary sectors rather than the value-added processing food sectors, they are exemplary of a state which dominates the food production industry, giving priority to sensitive and key industries, unwilling to relinquish control, and fully in charge of the direction of national industrial development. The Chinese State is demonstrating its responsibility for securing the food supply, and is carefully managing the development of the supply chain in order to increase food quality and safety. My research indicates that although there is consent for this policy at production level, there is also a view that it will take some time for local reality to catch up completely with this strategy and make it more effective. The next section details my second argument and concerns the nature and development of the State's legislative and regulatory

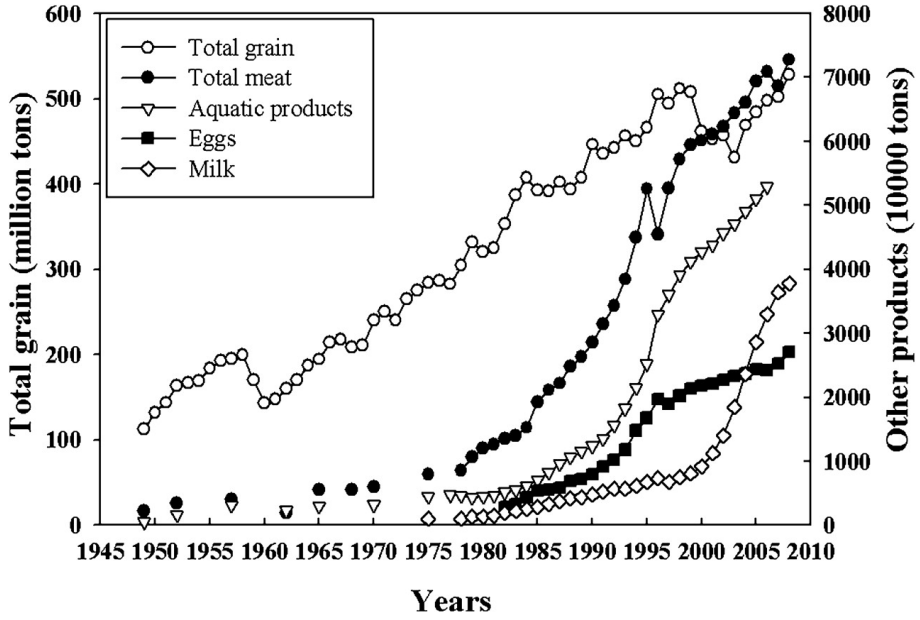
[52] Decree no. 21, 2013.
[53] The 110-page document encompasses strategies for the primary, secondary and tertiary industries, food companies occupy only a small portion of the total and are listed among the light industries (轻工).
[54] 淘汰 (tao tai) means eliminate through selection or competition with the objective to modernize/innovate, replace the old.
[55] Decree no. 21, 2013, p. ii, 1.
[56] Decree no. 21, 2013, pp. 20-31.
[57] Among others the example of soy bean production, Decree no. 21, 2013, p. 79.
[58] Decree no. 21, 2013, pp. 95-97.

framework.

## Assessment of reform and governance of the State's food safety control system

China has long been an isolated food economy, and has only gradually became more open and active since the 1980s, when Chinese state reforms started to focus on economic growth and creating the conditions for industrial growth. These measures have clearly been effective: the average annual growth rate in the food industry in China is over 13%.[59] The accession to the World Trade Organization in 2001 further accelerated development (see Figure 1).[60]

*Figure 1*. China's total grain, meat, aquatic products, eggs, and milk production from 1949 to 2008[61]




However, the fact that the number of severe food safety incidents has also risen rapidly in the past 15 years,[62] is evidence of deficiencies in the national food control system. Critical scholarship finds fault with the State's fragmented and segmented model of regulatory authority (i.e. a lack of clear definition of responsibilities), which has been responsible for gaps, overlaps and inconsistencies in control. In addition, the problems are also attributed to a lack of clear quality and supervision standards for production. My research, however, offers a different viewpoint: a production level perspective, which holds that the current legislative and regulatory framework is clear and transparent, responsibilities are well-defined at all levels of

[59] Bai et al. 2007, p. 480.
[60] Wang 2013, p. 114; Pearson 2007, p. 113.
[61] Jianhua Zhang J. Exp. Bot. 2011; jxb.err132 (data from the National Bureau of Statistics of China); World Bank food production index show similar high growth figures from end of 1990s.
[62] Bai et al. 2007, p. 481: e.g. the number of registered food poisoning cases quadrupled between 2001 and 2004.

governance, and the private sector is involved in policy making in several direct and indirect ways. That does not mean that there is no critique from food processors on the current system, but it does not concern the content and structure of the control system itself. In this section, I will discuss the following related questions. Are the production requirements and quality standards which must be complied with clear at production level? What is the nature of contact with officials and is the official counterpart for different types of questions clear? To what extent is the private sector involved in the continuing regulatory improvements? This section will start with a brief overview of the development of the national food safety control system from the second half of the twentieth century up to and including the implementation of the Food Safety Law (FSL) of 2009.[63] It also includes the main critiques of the system by scholars. In the second part, an assessment of the current system from the production level perspective, based on my research, will be presented.

*Development of the reform of the State's legislative and regulatory framework on food processing*

The Chinese State has struggled to keep the food legislative and regulatory framework in tune with market development. The first food regulation in China, the Food Hygiene Regulations on Administration (provisional), dates from 1965.[64] This was a period in which the government was primarily concerned with the sufficiency of the food supply.[65] These regulations predominantly dealt with the level of cleanliness demanded for facilities in which food products were manufactured, stored and transported. In 1982 the Food Hygiene Law (FHL) was enacted, the main aim of which was to set standards for food content, additives, packaging and manufacturing conditions in a period of economic reform and growing numbers of privately owned food manufacturing enterprises. Its concern was to deal with food hygiene in the sense of rotten or dirty food ingredients and unhygienic processes and production locations. It also prescribed penalties for violations of the FHL. The 1982 law was thoroughly updated in 1995, when requirements for production locations and equipment, as well as packaging, storage and distribution conditions, were laid out more clearly. Furthermore, the 1995 FHL stipulated that the Ministry of Health (MOH) was the authority with overall responsibility for the administration and supervision of food hygiene. Because there were still eight official agencies,

[63] Food Safety Law 2009.
[64] This paragraph draws on Bai 2007, pp. 482-483; Bian 2004, pp. 3-5; Jia and Jukes 2013, pp. 238-239; Pei et al. 2011, p. 415.
[65] China was recovering from a famine in which an estimated 30 - 45 million people died.

which overlapped to some extent, responsible for various aspects of food safety,[66] the State Council issued an Act called "Decision on further enhancing food safety management" in 2004 to harmonise the regulatory agencies. The duties of each department were linked to different parts of the supply chain (see Table 1).

*Table 1.* Food safety regulation agencies and duties 2004[67]

| Regulation link | Main food safety problem in the link | Regulation agency | Assistant regulation agencies |
|---|---|---|---|
| Planting and feeding | Planting: pollution of fertilizers and pesticides; Feeding: contamination of animal remedies and foodstuff additives | DA | EPA, MPS, SFDA |
| Processing | Food additives: foreign materials being introduced during processing; sanitation authorization | AQSIQ | MOH, AIC, BT, EPA, MPS, SFDA |
| Circulating | Counterfeit and inferior product; false publicity | AIC | BOT, MPS, SFDA |
| Consuming | Sanitation authorization; improper food prepare process and unscientific consuming habit, such as cross-contamination etc. | MOH | AIC, BT, MPS, SFDA |

The responsibility for manufacturing and processing was assigned to Administration for Quality Supervision, Inspection and Quarantine (AQSIQ). This department implemented the 'Food Quality Safety Market Access System (QS system) between 2003 and 2006. This divided the food sector into 28 categories, and introduced a compulsory food safety admittance system (QS tag on food packaging), which still appears on every certified packaged food in food retail (see Image 1).

*Image 1*. Compulsory QS tag on retail food packaging


Compulsory QS tag

Criticism and challenges faced by the Chinese government date back to the mid 1990s, when incidents of severe pesticide poisoning, coupled with an inadequate state response, demonstrated that legislation and regulatory control was unable to protect consumers from the

[66] Bai et al. 2007, pp. 481-482: Department of Agriculture (DA), Ministry of Public Security (MPS), Board of Trade (BOT), Ministry of Health (MOH), Administration for Industry and Commerce (AIC), Administration for Quality Supervision, Inspection and Quarantine (AQSIQ), State Food and Drug Administration (SFDA), Environment Protection Agency (EPA), all directly under the lead of State Council of China.
[67] According to Bai et al. 2007.

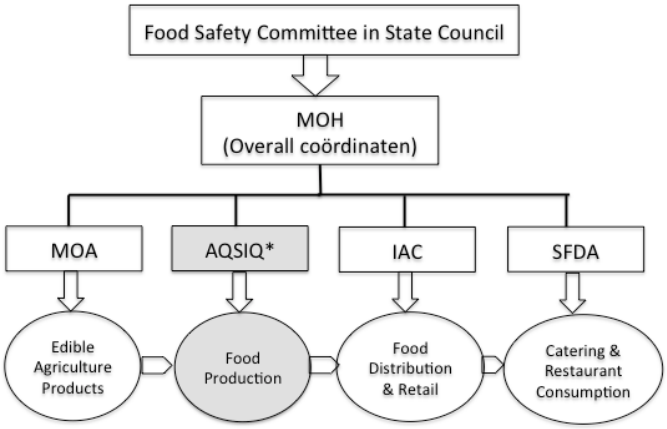
consequences of unscrupulous food production.[68] In the wake of the 2003/2004 Fuyang milk scandal, the AQSIQ conducted a nation-wide inspection of about 2,000 types of food and concluded that 20 - 25% was unfit for consumption. The extensive scholarly criticism of the Chinese food safety regulatory regime before the implementation of the Food Safety Law in 2009 can be summarised as three key areas of bureaucratic failure. The area most commonly criticised has been the fragmentation of the regulatory authorities: the above mentioned eight regulatory agencies and their administrations were involved, which resulted in both overlaps and gaps in duties, leading to incongruities and regulatory vacuums. In addition, regulatory capacity decreased down the levels (from central/national to provincial, county and village level), leading to the modified implementation of central policies at a local level. Furthermore, the competing interests of the central-level regulatory agencies (most of them ministerial agencies) obstructed initiatives for improvement. For example, the State Food and Drug Administration (SFDA) agency, modelled on the FDA in the United States, was introduced in 2003 to streamline the fragmented regulatory agencies, but was strongly resisted by existing agencies, and this resulted in it having only limited, and thus less effective, authority. A second area of criticism has been the conflicting roles of local officials, who are responsible for both regulatory duties and revenues. Since the late 1990s, government reforms have stipulated that regional and local regulatory administration costs must be funded from the central government budget, leading to the under-funding of government bureaucracy in many rural areas. There have been frequent cases of local officials who have been tempted to choose money over safety, resulting in a lax attitude towards violations of the food legislation and the issuing of licenses to unqualified enterprises. Finally, in addition to the fragmentation and conflicts of interest in food safety regulation, there was and still is, the problem of the regulatory divide between urban and rural areas. Regulatory capacity is concentrated in densely populated areas, and the AQSIQ control mechanism has concentrated on large and middle-sized food companies. But in 2005, 70% of Chinese food enterprises consisted of small, family-run workshops with fewer than 10 workers, and even though they accounted for only 5% of total food production, most spurious or inferior foods originated from this type of enterprise. Comprehensive reform of food regulation in China was long overdue, and the melamine infant formula scandal in 2008 accelerated the implementation of the Food Safety Law in 2009.

The enactment of the Food Safety Law (FSL) at the 7th session of the 11th Standing Committee of the National People's Congress of China on February 28, 2009, and its

[68] This paragraph draws on Bai et al. 2007, p. 483; Bian 2004, pp. 8-11; Tam and Yang 2005, pp. 9-15, 17-22; Thiers 2003, pp. 243-249.

subsequent implementation on June 1, 2009,[69] is regarded as a turning point in the continuing struggle with food regulation which began with China's re-engagement with the global political economy. The Food Safety Law (FSL) of 2009 was modelled on the EU regulatory framework for food safety and it's 'farm to fork' principle, renamed in China as the 'farm to table' principle.[70] The overall objectives of this extensive reform were to implement a modern food safety system that would meet international expectations and restore the confidence of Chinese consumers in domestic food by raising food safety standards within the legislative framework, restructuring responsibilities and the division of power and strengthening the regulatory framework of quality control and information. The FSL contains 104 articles in ten chapters[71] and encompasses legislative reforms, control management reforms, inspection & laboratory reforms and plans for an information, education and training system. The most important improvement was the definition of responsibilities: a decrease in the number of regulatory authorities and clarification of the responsibilities of each department at each step of the production chain. The reforms also included the establishment of the State Council's Food Safety Committee, which includes the high-level officials of all relevant ministries, and aims to improve government coordination and enforcement in order to solve systematic food safety problems. Figure 2 depicts the new structure of control management in the food supply chain, and Table 2 gives an overview of each department's responsibilities at each step of the supply chain.[72]

*Figure 2.* Food safety control management in the food supply chain FSL 2009[73]




* The update of the FSL 2015 assigned the responsibility of domestic food production to the FDA and import/export to the AQSIQ.

[69] FSL 2009.
[70] This paragraph draws especially on the comprehensive review of Jia and Jukes 2013, pp. 239-244, but also Li et al. 2010, pp. 292-293; Pei et al. 2011, pp. 414-418; Wang et al. 2013, pp. 118-119; Song and Tian 2012, pp. 326-328.
[71] FSL 2009.
[72] Li et al. 2010, p. 293; Jia and Jukes 2013, p. 239-240.
[73] According to Li et al. 2010; Jia and Jukes 2013.

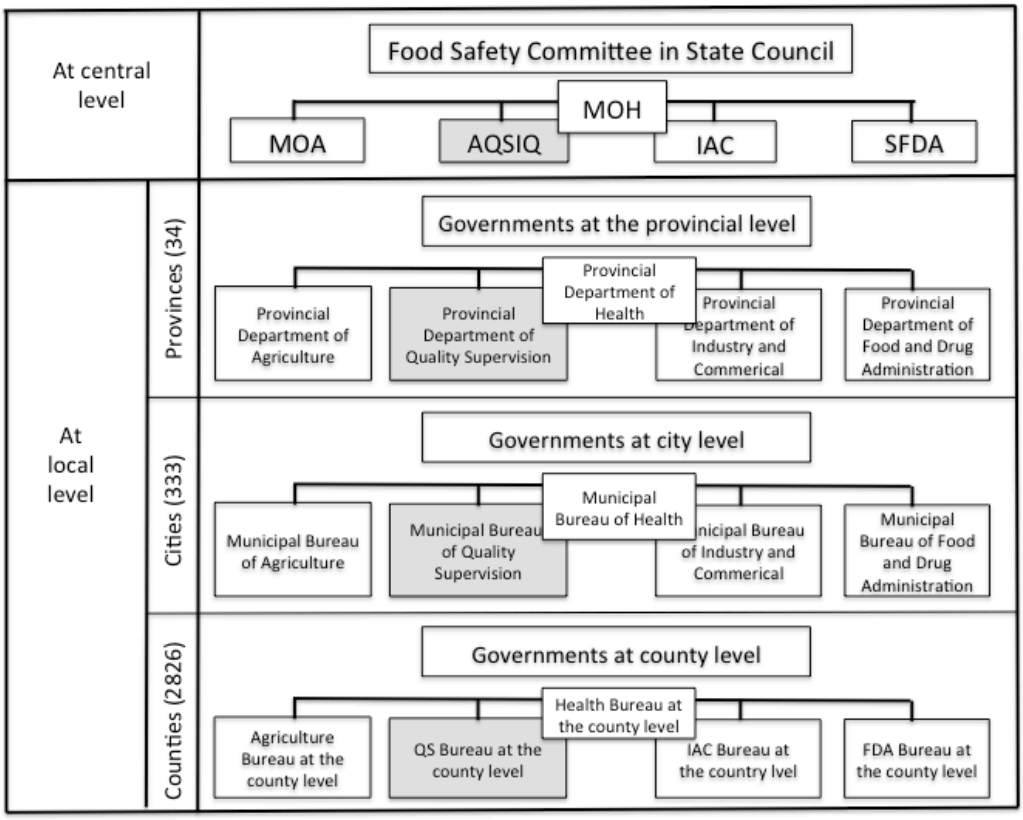
*Table 2*. The responsibility of each supervising department in the food supply chain[74]

| | | |
|---|---|---|
| **State Council's Food Safety Committee** | The head authority in food safety management | Analyse the situation of food security and planning the national food safety operation; develop the policies and regulations for food safety inspection; supervise the responsibility of related authorities. |
| **MOH** | Overall coordination for food safety | Risk assessment for food safety; development of food safety standards; dissemination of food safety information;<br>Development of the qualification requirements and inspection regulations for food inspection and testing agencies; dealing with serious food safety events;<br>Licensing for new food raw material, new food additives, and new food-related products; licensing for new types of additives and/or food-related products imported for the first time or food imported for the first time which are not covered by existing national food safety standards; |
| **MOA** | Edible agricultural products | Routine supervision and administration for edible agricultural products; administration of the utilization of the substance used during agricultural production; report risk information of food safety, propose risk assessment activity, and provide other related information to MOH;<br>Working with MOH to develop concentration limits of pesticide residues, veterinary medicine residues, testing methods and inspection procedures;<br>Report food safety events in time and cooperate with MOH for investigation; disseminate routine supervision and administration information of edible agricultural products, and report to other related departments. |
| **AQSIQ** | Food production | Issue food production license; supervision and administration for food production activities; license, supervision, and administration for production of food additives; supervision and administration for food-related products; supervision and administration for food import and export;<br>Authenticate the qualifications of agencies for food inspection and testing;<br>Assist MOH in dealing with food safety events; disposal of food-related illegal activities. |
| **IAC** | Food distribution and retail | Issue food distribution license; routine supervision and administration of food distribution activities; assist MOH in dealing with food safety events; disposal of food-related illegal activities. |
| **SFDA** | Catering and restaurant services | Issue catering service license; routine supervision and administration of catering service activities; supervision and administration of health foods; assist MOH in dealing with food safety events; disposal of food-related illegal activities. |

In terms of supervision and inspection at all levels of the regulatory system, the system of control management at a central level has also been applied to the three levels of governance in China: provincial, city and county (see Figure 3), in other words, a clear, vertical, top down central to local responsibility has been defined, and horizontal coordination between departments is assumed.[75] Furthermore, the Criminal Law Amendment of 2011 contains more severe punishment, including imprisonment alongside fines, for those violating food safety regulations. The FSL has abolished the possibility of exemption from inspection,[76] and is in the process of developing a risk-based surveillance system involving the systematic sampling of priority foods at laboratories. And finally, initial steps have been taken with regard to food safety information systems, education and training. In 2011, the State Council's Food Safety Committee established a Food Safety Promotion Education Works Programme (2011 - 2015), to create a better public understanding of food safety and improved awareness of laws and regulations, and to enhance the training of inspectors.[77]

[74] According to Jia and Jukes 2013.
[75] Jia and Jukes 2013, p. 241.
[76] Exemption from control enabled the Sanlu dairy company to produce melamine-tainted baby formula for a period of time.
[77] Jia and Jukes 2013, pp. 242-243.

*Figure 3*. The supervision and administration departments at all levels FSL 2009[78]




There is no doubt that the FSL represents significant improvements, but the literature after 2009 still points to deficiencies in the system; most importantly, the lack of clear specification for food safety and supervision standards, and the weakness of the Chinese control system in the sense that the new responsibilities are defined within an old segmented model of ministerial departments and different levels of governance which still leads to gaps, especially at a local level. To give one simple example: if an unsafe food product turns up on a supermarket shelf, it is not always clear whether the problem originated during the food distribution stage, or at an earlier stage in the course of food processing.[79] Subdivisions of regulatory departments at a local level are often reluctant to take responsibility for food safety issues, and the current system's ambiguity allows for this kind of behaviour. In addition, communication and cooperation between departments and regions has not improved and there is no effective information sharing mechanism among the regulatory departments, resulting in the sub-optimal allocation of resources such as facilities and inspectors.[80] In my opinion, what is lacking in this critique on the FSL of 2009 by food scholars is the question of what the emphasis on the

[78] According to Jia and Jukes 2013.
[79] Li et al. 2010, p. 293. In the Netherlands the Ministry of Agriculture is responsible for the agricultural products, however, the other steps of the chain are managed by the NVWA (Nederlandse Voedsel- en Warenautoriteit) by order of the Ministry of Economic Affairs and Ministry of Health.
[80] Jia and Jukes 2013, pp. 239-240; Li et al. 2010, pp. 292-293.

responsibility of food producers (Article 3 in FSL) actually entails. Articles 1 and 2 are about definitions in the FSL, Article 3 designates food producers and traders as the parties with responsibility for food business activities and food safety. This seems to imply at least a certain level of self-regulation, however, is not elaborated on further in the document, and not questioned or discussed in the academic literature.

### *Food legislative and regulatory control: the State firmly in driving seat; receptive but reactive*

The organisation of effective food safety control in China's development pressure cooker is an immense and difficult task. Much progress has been made since the implementation of the FSL in 2009.[81] Scholars attribute persistent food safety problems to an ineffective, segmented model of regulatory authority and a lack of clear quality and supervision standards. The literature does nothing to examine the ambiguity of the information contained in the FSL of 2009, which clearly designates responsibility to the food industry while at the same time specifically defining state control at all levels. In addition, the subject of private sector involvement in legislative and regulatory reforms is hardly mentioned,[82] despite, in my opinion, being an important question in such a comprehensive innovation.

In the first step of the research[83] I received little concrete information about the current legislative and regulatory framework other than that the government is constantly making regulatory changes in response to issues, that the number of policies is increasing, and that it is difficult to understand unless you are a specialist regulatory affairs manager.[84] Some respondents confirmed the lack of clarity with regard to how to interpret regulations and to assess when a new regulation will take effect and in what way,[85] and also said that mutual trust between people and local political goodwill, rather than reliance on institutions, are still the key to doing business. One respondent mentioned that as long as you can still 'buy' certifications in the market, trust in the system will not be sufficient to make regulation and control work effectively. This input seems to confirm the critique expressed in the academic literature. On

[81] It is worth remembering that the EU traceability law only took effect in 2002, which, according to contact A, resulted in considerable stress within food companies to comply at the time.
[82] In Jia and Jukes 2013, p. 239 there is one reference to the possible involvement of the food producers, however, this is taken from an official source: "The food safety standards also solicited and took opinions from food producers, traders and consumers before enacting (MOH, 2011 a,b)".
[83] Contacts or respondents are not mentioned if the subject of their statement may be sensitive.
[84] Remarks made by Contact C and D.
[85] Contact C, also mentioned by respondent I.

the other hand, it is also recognised that the 'culture of dependence'[86] still exists in Chinese business operations; food production processors are used to operating based on control and sanctions from government officials and are not yet ready to assume complete ownership of food quality assurance themselves. Illustrative of this point is the fact that Chinese operators can not object to or refuse any request from a government official, 'because it is the government that asks'.[87] Another example is the common experience that Chinese employees are used to following orders without questioning the reason why, so when asked during quality audits why certain things are done in the production process, the answer is 'because the boss wants it that way'.

As this part of my research still produced a mixed picture of perceptions of the current legislative and regulatory framework and no clear assessment of its development, I prioritised this question in my on-location inquiry. Three of the six company interviews included an interview with the director or manager of QA & RA (Quality Assurance and Regulatory Affairs), all of whom were native Chinese.

The on-location interviews[88] in Shanghai and Jiangsu province, and in particular the interviews with the specialist QA & RA managers,[89] offered new insights into perceptions of the current legislative and regulatory framework at a food production level, which were in contrast to the views expressed in the academic literature. All respondents regarded the current food legislation as clear and transparent. They see the 2015 update of the FSL[90] as much more comprehensive and detailed.[91] For example, in the 2009 version, article 67, regarding the labelling of food products, contained barely four lines of text, while in the 2015 version it takes up almost a whole page and includes a detailed description of every aspect of the label, as well anew elements such as: 'table of ingredients or formulations', 'code of product standard(s)', 'storage requirement', 'generic name of the food additives as determined by national standards', etc. According to two respondents who have been involved in the building of a factory in China, it is clear what production standards must be complied with to obtain a food production license,[92] 'You 'just' have to fill out 30 forms, prepare 10,000 product samples for testing and wait three months for the approval'. And to get the product certified for the QS tag is also seen as straightforward: 'There are quality standards for any kind of food product, we produce X and

[86] A term mentioned by Delman 2003, p. 13.
[87] A point made by contact C.
[88] Respondents are not mentioned if subject or statement may be sensitive.
[89] Respondents III, VI and VIII.
[90] FSL 2015.
[91] This point was in detail discussed with respondents IV, V, VI, VII and X.
[92] Respondents IX and X.

belong to product type XX with a certain GB (*guojia biaozhun*),[93] and that specifies clearly what is permitted in terms of micro-biological levels, what the required in process temperatures are, what the required storage temperatures are, etc... It all makes sense'.[94]. Furthermore, the 2015 FSL clearly puts responsibility for food production with the lower level FDA. None of the interviewees were unclear about who their official counterpart was (FDA for domestic production, AQSIQ for import/export) or what was decided at a local or provincial level (FDA) and what at a central level (CFDA). For example, QS certification for non-sensitive foods can be dealt with at a county/city level, changes in production process, as well as the 3-yearly renewal of the production license, will be decided at a provincial level, and the registration of recipes for infant milk powder has to be dealt with by the CFDA in Beijing. But responsibility at a local level also means that some variation in implementation is unavoidable. For example, one respondent[95] mentioned that the city-level FDA in Shanghai – renowned for its strictness – has been known to install cameras in sensitive production facilities, such as meat processing sites. Another example of different interpretation locally was one company who moved a facility to another district and had to make all sorts of changes to comply with the new district's interpretation.[96]

There are also downsides to the clearer designation of responsibility at local level. Because local officials then become personally responsible for any issue within their area of jurisdiction, and in view of many recent cases involving the severe punishment of officials, officials at the local level are not willing to take any chances. One interviewee stressed this point,[97] explaining that even the local fire brigade official who has given approval for a production facility will be liable for life, even after his retirement, in the event of a problem. Several companies[98] mentioned the problems they encounter if their production process or product differs from the stated policy or GB, even if the variation is an improvement in terms of quality or process. No official is willing to take responsibility, either at a local level or at a provincial level. An example from the dairy industry clearly illustrates this point. [99] In Europe it is customary to use 'wet blending' in diary production, which means that different types of raw milk are blended

[93] GB (*guojia biaozhun*) is the abbreviation for National Standard; in food there are GBs for most product types, a GB contains the requirements a product has to comply with and is used for testing. Previously, if there was no GB for a given food product type it meant that there were no specific requirements other than the general ones in the FHL or FSL, however, more recently, with the clear responsibility for food issues at a local level and severe punishments, the lack of a GB for a given product means that no official will be willing to sign it off (discussed with respondents VI, IX and X).
[94] Quote from respondent IX.
[95] Respondent II.
[96] Discussed with respondent IV.
[97] Respondent IX.
[98] Discussed with respondents I, II, VIII and X.
[99] Discussed with contact C.

before being spray dried to produce the final product. This is known to result in a more stable and better quality end product. In China, dairy processors use a dry blending process, which means that each raw milk type is first spray dried and different milk powders are later mixed to produce the end product. It is this type of process which is described in the GB for milk powder (simply because other processes are unknown or not used in Chinese operations) and thus it is not permitted to use the wet blending process, even though it is known to produce a better quality product. One respondent in a sensitive food industry mentioned another case where the provincial government was asked to approve some alterations (improvements) to the production facility. They escalated the request to central level for written consent; central level refused and referred the case back to provincial level, stating that it was their responsibility. A few other respondents[100] mentioned that they were very keen to avoid any ambiguity, and usually took the safe route and adopted the strictest requirements; the requirements of international companies are often more stringent than those of the Chinese.

On the question of whether the companies were involved in drafting policy or evaluation, all respondents reacted affirmatively. Draft policies are generally posted on the department's website, and comments from companies are invited, which then will be included in the next draft. As for implementation, grace-periods are often taken into account. Some local officials invite companies in their district for discussion seminars or training sessions concerning new policies.[101] For the sensitive industries, the Chinese Food Risk Assessment Centre (CFRAC) invites experts and key players from the industry to Beijing for discussion sessions about policy trajectories, sometimes two to three years in advance of implementation.[102] One of the respondents was regularly invited to these sessions, and praised the transparent and professional way of working. Another way of being involved in policy making is through food universities. One of the respondents[103] mentioned that specialist universities are often given the task of drafting GBs, and building a close relationship with these universities is one way for private companies to become involved early on in policy development. It also works the other way around: universities responsible for drafting GBs for certain food industries often consult specialist firms, both Chinese and international, to participate, because they have access to a global knowledge and data networks. Finally, most respondents have experienced cases of unreasonable or impossible policies, for example, the maximum contaminant level of another category has been applied without checking the applicability to the category in question, EU or

[100] Respondents IV, IX and X.
[101] Discussed with respondent III.
[102] Point raised by respondent VIII.
[103] Respondent X.

Japanese legislation has been wrongly interpreted, or raw product-levels have been confused with refined product-levels.[104] In all the cases discussed with the respondents the officials had been receptive to reasoned argument, and had adapted the policy accordingly. The opportunity for involvement in and reaction to policy making is not, however, the same as more self-regulation. Above all else, the current legislative and regulatory regime is about control and testing, 'they are mad about testing, they test everything' one contact remarked.[105] In general, the respondents acknowledged that this is probably currently the best route. As one respondent put it: 'you have to use very strict regulation to help people set up good habits, then the habit becomes the common sense way for the next generation. This is the way'.[106]

Criticism of the current system at production level is mostly with regard to its reactive, rather than pro-active, nature. Regulatory development follows issues in the market, or happen as a result of educational work by international or innovative companies, producing a constant stream of new policies and policy changes. Several respondents mentioned examples of how they had to 'educate' officials about innovative, effective, more qualitative or safer way of working.[107] One example clearly illustrates this point: the warehouses of production companies were traditionally in-house, meaning they were part of the production facility; production regulation requirements stated that warehouses should be part of the production premises. As companies grew larger and space became scarce, companies had to look for other alternatives and began outsourcing the warehousing element of their production. Since this did not conform to the regulations, this way of working was not approved. The respondent in question related how they had to provide argumentation, give examples of how this system works in Western countries, and arrange inspections of these third-party warehouses. Eventually the State officials came to understand this new way of working, were convinced that it did not compromise quality levels, and adapted the regulations. Another general criticism is of the approach of the State's regulatory process, which is rigid, political and scientific rather than a more business-oriented approach based on knowledge of the production process. This sometimes leads to unnecessary and impractical requirements, takes time and is often a costly process for companies. One respondent[108] remarked that the State focuses on end-product standards and hardware requirements in production facilities due to lack of knowledge of the production process flow combined with a lack of trust in the company to take responsibility. For example, the company in question was required to build different changing rooms for

[104] Several cases from respondent II, VIII, and X.
[105] Contact D.
[106] Remark by respondent VIII.
[107] Point mentioned by respondents II, IV, VIII.
[108] Remark by respondent IX.

workers – in the food processing area, primary packaging area and outer packaging area – to prevent cross-contamination, despite the fact that the company's factory layout and overall hygiene plan clearly assured food safety. It is also not unusual for companies to have to wait several months for approval, or to be forced to stop production while they await approval of minor process alterations. This lack of business knowledge and experience sometimes also results in unrealistic regulatory reform or irrational requirements. One example given in the previous section is the regulation in dairy processing that required packaging into consumer products to take place at the same location as the processing. This was a regulation that had to be implemented within one year. It was an attempt to phase out small milk powder mixing facilities, recognised as the type of place where counterfeiting is regularly detected. The size of the industry in question and the vast number of processors involved nationwide made this regulation impossible to implement within one year, and so it was subsequently not put into effect at all, and the respondent remarked that a year after the announcement nothing more was heard about it. Another example is of a company that produces a food supplement as its end product, but wants to sell that same product as a food ingredient.[109] In Europe, it is no problem to produce a product destined for different purposes in one facility as long as it complies with the standards for all the product categories. In China, however, this is not possible, because of the previously mentioned 'end-product focus' and the rigid application of the legislation. A single factory is not permitted to produce an end-product and an ingredient at the same time, even if it is exactly the same product. To comply with the current standards, the company is required to build another factory, and in the present atmosphere of risk-averse officials it will be difficult to bend the rules.

My on-location inquiry presents a different picture of the current government's legislative and regulatory framework than that offered in academic literature: the framework is clear and transparent, responsibilities are defined at all levels, and the private sector is involved in policy making in several ways – although this is not the same as increased self-regulation. Negative points are the lack of a proactive and business-oriented approach, and an inflexible application of legislation. To sum up: there is little confusion about what is required of food processors by law and who is in the driving seat, which leaves no responsibility at food-production level other than that of compliance. As one respondent mentioned: "I really see no development towards more self-regulation, companies do everything to be and remain compliant". The next section looks into the role and importance of industry associations in the state-private nexus.

[109] Example discussed with respondent X.

## Significance of industry associations in China

Industry associations in Europe occupy an independent position in between the State and private sector, and their role is of great importance in most sectors. A European QA manager of an international company[110] summed it up as follows: 'Quality is the key to their existence, it is their reason for being, to increase the quality standards of the sector is their ambition'. The literature on food safety control systems barely touches on this subject, other than mentioning industry associations, such as the China Dairy Industry Association, the Shanghai Dairy Association and the National Swine Industry Association.[111] Only Delman[112] briefly discusses the role of 'other institutional stakeholders' in food processing in the beginning of 2000s. His observation is that old and new associations are still controlled by the party-state and are obliged to follow the Party line, even though they call themselves 'non-governmental' (*feizhengfu xingde* or *minban*). He is not hopeful about a meaningful independent role of industry associations in the near future in China, although he does mention the ambitions of initiatives to play a more independent and important brokering role between the State and industry, with the objective of working on quality standards for the sector. The status and significance of industry associations in the market is an important aspect to discuss in this paper because it is indicative of whether the State (and the market) is ready for a more shared cross-sector approach to business representation and control.

The first step of my research confirmed the existence of these associations, but resulted in no further insights into their structure, independent status and role. The interviews in Shanghai and Jiangsu in the second step of my research, however, were useful in supplying information on how the industry association cooperate with production companies in practice.[113] All companies interviewed were members of at least one industry association, and often of several. A medium to large international company, for example, can be a member of the regional industry association of a particular sector or sectors, as well as the national industry association and sometimes a relevant EU/International industry association. One of the interviewed Shanghai based Chinese companies, a fish processing company, is a member of the Shanghai Fishery Association.[114] Often it is the company's QA & RA manager as well as the Managing Director or General Manager who are active in these industry association. The feedback of the respondents on the usefulness of these organisations was mixed; some regarded them as

[110] Contact A.
[111] Delman 2003, p. 24; Schneider 2016, p. 12.
[112] Delman 2003, pp. 24-25.
[113] Respondents are not mentioned if subject or statement is possibly sensitive.
[114] Discussed with respondents II and III.

nothing more than a place for networking, and not very influential or as an obligatory membership. Others proclaimed their usefulness in information sharing, preparing documents for obtaining a production license, or as a vehicle to consolidate industry opinion on a certain issue to communicate to the government. And naturally, as in Europe, much depends on the particular industry, industry association and its management; there are many differences.

In terms of how these industry associations operate as intermediary between the State and private sector, there are many similarities with the way it works in Europe. The flow of information goes both ways: companies use the industry association to consolidate opinions on an industry issue with, for example, a new regulation, and channel it via the association to the authorities, and authorities use industry associations to communicate new policy or pre-policy information or a request for information in an early phase of regulatory development[115]. One respondent mentioned that it depends on the kind of issue you are facing as a company, if it is a problem common to the whole industry, the industry association is the preferred channel.[116] The difference to Europe, however, is that the industry associations in China are closely linked to the State, as all respondents confirmed. One respondent clarified: 'From the outside it looks like an independent association, no official government people inside, independent finances, but in fact these kind of associations are set up on government instruction, and government "moves" people to set up such an organisation'. In other words, industry Associations in China are most often set up at the initiative of authorities, and also regularly include both serving and ex- government officials in their management. From our Western perspective we would consider this lack of independence as a negative characteristic, however, several respondents mentioned that for them this was actually a positive point. The above mentioned respondent said: 'The function of the association is that the government helps the industry in the business side or the technology side'. In their opinion, the close links between the association and the authorities were a confirmation of its usefulness; one respondents characterised the industry associations as a 'state lubricant', and explained that sometimes in the industry there is a lot of emotion and the industry association can reduce the emotion to the authorities in their contact.[117] But information the authorities do not want to put on the table openly, can also be channelled via industry associations. In fact, the industry association can be seen as another semi-official window facilitating businesses and complementing the official FDA regulatory window. One respondent's comments sum it up quite clearly, saying that in China the State will do everything to encourage and grow businesses, and industry associations are part of the plan

[115] Based on respondents VIII, IX and X.
[116] Discussed with respondent VIII.
[117] Comment from respondent VIII.

to achieve that objective.[118]

My research into the current status and importance of industry associations in China is exploratory in nature and requires further study for more substantial evidence. Initial findings indicate that food industry associations in China operate in a similar way to those in Europe, serving as two-way intermediaries between the State and private sector, but are not independent of the State, on the contrary, they are often set up by the State and follow the State's agenda. Still, they are considered to serve a useful purpose by the food industry, as they fulfil a necessary facilitating role in the sometimes strained contacts between regulatory administrative departments and the private sector. The final part of my argumentation follows in the last section and debates the usefulness of Beck's theory of 'risk society' in understanding China's path to modernisation and to the risk perception of the key stakeholders in food supply.

## China's path to modernisation and Beck's "Risk Society"

German sociologist Ulrich Beck's theory of Risk Society[119] is often cited in discussions on the hazards of modern times, such as ecological crises, terrorist threats, global financial crises and food safety scares. Beck's theory is useful when trying to understand a world that seems unhinged, because he explains how the continuous modernisation of society has 'produced' and is still generating 'manufactured' risks: risks which are not caused by fate, act of God, nature or other external forces; on the contrary, they are the product of human decisions; they are industrially, scientifically and culturally produced. According to Beck, 'the gain in power from techno-economic "progress" is being increasingly overshadowed by the production of risks'.[120] Western nations have made the transition from an 'industrial society' to a 'risk society',[121] and because we are increasingly more connected, the repercussions of these risks are greater in scale.[122] Beck illustrates this as follows: 'A universalization of hazards accompanies industrial production, independent of the place where they are produced: food chains connect practically everyone on earth to everyone else'.[123] One of the foundations of Beck's theory is the concept of *reflexive modernity*: in the latter part of the 20th century, traditional societies transformed through early modernity into a late or reflexive modernity in which individualism deepened, and in the formation of modern society, new classes of people began to reflect on their

[118] Comment from respondent X.
[119] Beck 1992.
[120] Beck 1992, p. 13.
[121] The foundation of Beck's theory is based on an analysis of European societies, it is therefore sometimes criticised as Eurocentric, however, Beck later extended his argumentation to include developing countries.
[122] Veeck et al. 2010, p. 223.
[123] Beck 1992, p. 36.

relationship with the institutions and structures of society. Beck describes how these modern national institutions and nation-state structures are not organised to respond adequately and control the 'manufactured' risks.[124] He calls for the opening up of policy making to greater levels of public accountability and shared responsibility.[125]

In this paper, I raise doubts as to whether Beck's plea against the logic of traditional control by government institutions is applicable to China, because China is following a different path to modernisation as compared to European nations. In this section, first the application of Beck's theory to developments in China will be discussed, as well as similar ideas from two other scholars. This will be followed by an assessment of the current reality of how stakeholders in the food supply chain are reacting to 'risk society' in China: in other words, how are the key stakeholders in food supply experiencing the risks associated with rapid transformation in the food infrastructure, and how are they responding to state institutions?

*Risk society has come to China*

As stated in the title of this paper, 'risk society' has come to China in the sense that Chinese society is becoming increasingly exposed to 'manufactured' risks; the consequences of the fast pace of modernisation process in China. The outbreak and spread of Severe Acute Respiratory Syndrome (SARS) in 2002, and other serious incidents, such as the melamine-tainted baby milk formula in 2008 – but more especially the bureaucratic mismanagement of these public health incidents – may signal that risk perception has become an important new factor in the lives of Chinese people, and that risk management will be added to the criteria of legitimacy of the Chinese party-state.[126] One aspect of 'risk society' is that the level or potential of risk is no longer something for experts alone to decide, but has also become a function of public perception: in other words, social and cultural judgements have become important in risk assessment.[127] If people experience a risk as real, it becomes real as a consequence.[128] Non-state actors can challenge official assurances, leading to public mistrust and sometimes even anger towards state administrators. In democratic systems, this poses challenges to the traditional institutions of governance, however, it presents an even greater challenge to non-democratic political systems, because authoritarian models rely to a much greater extent on a limited number of institutions which can be held responsible for all aspects of political,

[124] Beck 2006, pp. 336-338.
[125] Yates 2001, p. 106; Beck 2000, pp. 226-227; Thiers 2003, pp. 242-243.
[126] Thiers 2003, p. 243.
[127] Yates 2003, p.102.
[128] Beck 1992, p. 77.

economic and social life, and which are insulated from public debate;[129] in Beck's words, the system obstructs reflexivity.

When we look at the development of China in the past decades from the perspective of Beck's theory of Risk Society, China is going through a 'compressed modernization', combining a largely industrial state with elements of a post-industrial state.[130] The accompanying rapid development of science and technology should be combined with a series of changes in social structure and politics, such as individualisation, and reflection on science and technology and on the political system. Beck advocates an opening up of previously depoliticised areas of decision-making, global communication and cooperation and greater levels of public accountability, in order to maintain social trust.[131] Social trust is an important precondition for a modern and stable society, and the accompanying legitimacy is indispensable for the Chinese party-state.[132] The widespread production and distribution of contaminated and fake food products in China in the past 15 years has posed challenges to social trust. If the Chinese government reacts by increasing the number of regulations and supervisory standards, regulatory agencies and committees – in other words, more control – this will produce a false sense of security (the risks are still there). In addition, according to Beck and other scholars inspired by his theory, this reaction will turn China away from becoming a more open modern society, will be ineffective due to the fragmented authoritarianism of the Chinese bureaucratic state, and could even lead to 'reflexive secrecy': a non-communicative society where nobody has or takes real responsibility.[133]

The scenario described above is exaggerated in my opinion, however, other scholars also object to the logic of control long held by the Chinese government and prefer more open, collaborative mechanisms. Pei et al. propose a co-regulation approach: a phased structural reform of both the public and private sector in which the public sector designs clear guidelines for the food industry (instead of new legislation) and economic incentives to upgrade companies' quality systems, while the private sector commits to the gradual implementation of a quality assurance system (rather than quality control).[134] Song and Tian propose a synergetic rather than a segmented approach, in which departments across all stages of the production chain collaborate with the help of a cross-department information platform. In addition, they suggest a food safety credit supervision platform, also across the stages of the production chain,

[129] Thiers 2003, p. 243.
[130] Beck, Deng, Shen 2010, p. 208; Yan 2012, p. 706.
[131] Yates 2001, p. 106; Beck 2000, pp. 226-227; Thiers 2003, pp. 242-243.
[132] Based on Yan 2012, pp. 705-707.
[133] Argument based on Beck 2000, pp. 218-220; Thiers 2003, pp. 243-246; Yan 2012, pp. 720-724.
[134] Pei et al. 2011, p. 419.

where stakeholders collaborate: i.e. government with industry and consumers, to collect 'from farm to table' credit information which can be evaluated against food standards.[135]

*China's path to modernisation and risk perception*

In my opinion, the application of Beck's theory to China does not sufficiently take into account China's alternative path to modernisation; not only going through a compressed modernisation process, but also combining this with a change from a state-planned economy to a largely market-based economy, resulting in a mix of different benefits and risks. Benefits and risk resulting from the rapid transformation of the food production and supply system, and benefits and risks resulting from new market conditions such as the fast growth of privatised and private food companies, demand-driven pricing, and the availability of an extensive variety of products and brands from all over the world.[136] Contrary to Beck's theoretical expectations, current reality in China demonstrates that the key stakeholders in food supply are not blaming the risks resulting from these rapid changes on failing government institutions.

Literature argues that Chinese consumers largely blame food safety problems on unscrupulous food processing industries and vendors.[137] Frequent nationwide food safety incidents have increased consumer concern with regard to food quality and safety, and have resulted in a loss of confidence in the domestic food supply. In recent research, food safety was shown to be one of the top social concerns – above high food prices and corruption – and a 2013 report by the Public Opinion Research Laboratory and Crisis Management Centre of Shanghai Jiao Tong University stated that Chinese consumers were 74% more concerned about the food industry than in 2011.[138] As mentioned above, consumer research conducted in five major Chinese cities (Beijing, Nanjing, Changchun, Shijiazhuang and Kunming)[139] confirmed these perceived potential food risks to a large extent. Consumers greatly appreciate the increase in the number of outlets and variety of food products, but experience has shown them that this comes at the cost of increased risk.[140] What, in my opinion, is surprising, is that although Chinese consumers' risk perception of food safety is real and deepening, they do not attribute the problems to technological innovation, but rather to a misuse of technology by food producers and vendors,[141] and that furthermore, far from their trust in the government's ability

[135] Song and Tian 2012. pp. 329-332; more collaboration between state and private sector also argued by Thompson and Hu 2007, p. 15.
[136] Veeck et al. 2010, pp. 224-225; Yan 2012, p. 706.
[137] Ortega et al. 2011, pp. 319, 323; Veeck et al. 2010, pp. 228-232; Yan 2012, pp. 717-718.
[138] Wang et al. 2013, p. 116.
[139] Klein 2013, pp. 381-389; Veeck et al. 2010, pp. 228 - 232.
[140] Veeck et al. 2010, p. 228.
[141] Veeck et al. 2010, p. 233.

to control having diminished, they believe that the level of control by state institutions needs to be increased.[142]

As for the other key stakeholders in food supply, the food processors, my research indicates that the production level is also largely supportive of the government's strategy to maintain, and in some areas even strengthen, supervision and control. As described in the first section, they understand that interference in supply chain development is desirable, particularly in order to phase out the smaller players, who are often inefficient and irresponsible. Some respondents in my research even advocated a harsher 'no tolerance' strategy at a local level to actually close down such unscrupulous small players and their 'old ways and bad habits'.[143] Making lower level FDA officials personally liable for the food production companies in their area of jurisdiction is a necessary part of that strategy. Despite the burden of the continuous expansion and rigidity of the current regulatory control regime on professional and complying food production companies, as discussed in section two, there is also an understanding of the need to regain the trust of consumers in domestic production. The respondents all noted that they, as professional and quality conscious companies complying with all government regulations (and often even adopting higher standards), are the ones most damaged by the actions of unscrupulous food producers and processors, both in terms of consumer trust in food products in general, but in branded products in particular. A recent case of counterfeited cans of infant nutrition, purporting to be of the brand Similac from Abbott in China, illustrates this point clearly.[144] Even though the Similac brand had itself been the victim of criminal activity, consumer trust and sales in the brand plunged.

To summarise: in terms of food safety control systems, Chinese consumers are not turning away from government institutions, on the contrary, they believe it is chiefly the task of the government to provide adequate food safety and quality control. My exploratory research indicates that professionals engaged in food production are generally positive about the government's strategy and step-by-step course of development and improvement, and do not point to major differences in perception of risks between the State and the private food processing sector.

## Discussion and conclusion

In this paper I have argued that the Chinese State is not relinquishing control of the food supply chain for the benefit of self-regulation of food production companies. On the contrary, the State

[142] Ortega et al. 2011, p. 323; Veeck et al., p. 230.
[143] Respondent II, VIII, IX.
[144] The Straits Times 2016.

appears to be tightening its grip on the course of national industrial development through direct and indirect interference in the food supply chain and an intensification of legislative and regulatory control in order to secure national food supply and increase food safety and quality. Through an examination of the perception at production level of the development of state influence versus self-regulation in a two-step exploratory research, I have reasoned that in contrast to the ambiguity portrayed in the literature, food processors are not confused about state strategy, the division of responsibilities or the role of industry associations. Furthermore, I have observed that both consumers and processors recognise that in China's current phase of development strict state control is probably the best way forward. Finally, based on analysis of the current stakeholders' perceptions of risks and responsibilities in the rapidly transforming food supply chain in China, I have raised doubts about the application of Beck's theory of 'risk society' to China.

The findings of my exploratory research are indicative, and require further validation to enable the drawing of conclusions. The dynamics of the Chinese food supply chain and global interactions also demand the regular monitoring of developments. The current political climate and importance attributed to food safety by Chinese society and the national and international media suggests that the State will not opt for more self-regulation of the food industry in the near future, and that this will in any case be a gradual, step-by-step development. One respondent summed it up as follows: ‘I think the Chinese government is on a good track, even though it is simply introducing and enforcing higher, stricter standards, and thereby discouraging smaller companies in their old ways, ..., I think at this point in time it is the only way, and maybe in twenty years time, when the industry is more mature, it will be time to relinquish some of the responsibility back to the companies’. In the meantime, as several respondents in my research mentioned, it would be advisable for foreign food companies who wish to do business in China to investigate in advance and in detail the relationship between the State and the private sector, and it is imperative that they employ native Chinese experts to advise on QA and regulatory affairs.

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## Appendices

### Research step one: set up and list of contacts and interviews[145]

The first study was conducted from April until mid-May 2016, with some follow-up contact in June 2016. The main objective of this study was to gain a better understanding of the food supply chain structure in China and the extent of state interference in supply chain development, perception of state's regulatory reform, the EU's legislative and regulatory framework on food in comparison to China's, and finally the influence and role of industry associations in China as an intermediary between the State and private sector. Apart from the exchange of ideas, additional literature was supplied, e.g. companies' industry notes on specific food sectors in China and a company white paper on a particular food sector in China.

List of contacts/interviewees:

A. Ms E. Kruiper, currently Quality and Sustainability Manager at Wild Flavors Inc., the Netherlands, formerly Manager International CSR, R&D project leader and Food Legal Manager at Sara Lee Douwe Egberts Inc. Contact includes several telephone conversations, email contact and links to EU legislation from April until June 2016.
B. Supply Chain Analyst at a Food & Agribusiness Research department of an international financial institution, the Netherlands. Contact includes telephone conversation, email contact and several industry notes from the company in April 2016.
C. Mr A. Schaap, Director Dairy Development China, Royal Friesland Campina N.V., the Netherlands. Contact includes interview and several documents on Dairy development in China in May 2016.
D. Global QA director at an international food company, the Netherlands. Contact includes email and telephone contact in May and June 2016.

[145] Several contacts have been anonymised on request.

**Research step two: set up and list of contacts and interviews[146]**

The second study was conducted in the second half of May 2016 in the greater Shanghai region and Jiangsu province. Interviews were conducted with ten persons from six different food companies, ranging from small to large, local and international food production/processing companies, all of which primarily produce for the domestic market, with some also producing for the export market.[147] Half of the interviews were conducted at the production facility, the remainder at company offices detached from the production facility. Interviews lasted from one to three hours, and sometimes included company presentations, images/videos of the production facility, and a tour of the premises. My request to enter and observe the production hall during the production process was denied by all companies due to company safety regulations. Of the ten interviewees, seven were Asian (of which five native Chinese, one from Hong Kong and one from South Korea) and three were European (all living and working for more than five years in China). The majority of the interviewees asked to remain anonymous and that their company's name not to be mentioned at all in this paper. In the contact confirming the interview details I also probed the possibility of arranging a meeting with a local FDA official or inspector, however, this was directly refused in all cases, and regarded as impossible; the nature of contact with officials is considered too crucial and sensitive.

List of respondents:

I. Mr L. Coolen, Managing Director Friesland Huishan JV, Shenyang, Liaoning province; Skype interview conducted on May 16, 2016.
II. Ms M. Lu, Managing Director of Hollywin Seafood and Hofung Frozen Food, Fengxian, Shanghai; interview conducted at production facility on May 17, 2016.
III. Mr Lü, QA director of Hollywin Seafood and Hofung Frozen Food, Fengxian, Shanghai; interview conducted at production facility on May 17, 2016.
IV. R&D director of an international packaged goods food company, Shanghai; interview conducted at R&D centre on May 18, 2016.
V. Microbiologist of an international packaged goods food company, Shanghai; interview conducted at R&D centre on May 18, 2016.
VI. Technical manager (related to Legislation) of an international packaged goods food

[146] Several contacts have been anonymised on request.
[147] The companies interviewed are all operating at high standards, mostly higher, international standards than the required Chinese ones, and all are HACCP and ISO 22000 certified. Furthermore, the Shanghai area is apparently known for particularly strict supervision and control. I am aware that this is not representative in any way of food production, but it is sufficient for 'a' food production perspective.

company, Shanghai; interview conducted at R&D centre on May 18, 2016.

VII. Product Developer of an international packaged goods food company, Shanghai; interview conducted at R&D centre on May 18, 2016.

VIII. Senior Director RA & QA (Regulatory Affairs & Quality Assurance) of an international food manufacturing company, Shanghai; interview conducted at Shanghai office on May 19, 2016.

IX. General Manager of an international packaged goods company, Taicang, Jiangsu province; interview at production facility on May 19, 2016.

X. Operations Director of a food supplements and ingredients company, production facility in Taicang, Jiangsu province; interview conducted on May 20, 2016.