

# Commercial Pig, Broiler and Laying Hen Farm Structure in China, 1996

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269 (in English).

## Abstract

この報告は豚、ブロイラー、産卵鶏の商業規模について着目したものである。入手できるセンサスでは、農家単位の情報のみで、規模の大きい生産については含んでいないため、この報告はこのギャップを埋める豊富な情報を提供している。使用されているデータは、1998年にジェームズ・R・シンプソンが龍谷大学国際社会文化研究所の助成を受けて中国で行ったフィールドワークの際に収集されたものである。これらは中国・北京市の農業省(MOA)畜産・獣医局(AHVB)が1997年に実施した、未出版の調査から得たものである。最終的にこの調査報告は、中国には多数の大規模、および最大規模の豚、ブロイラー、産卵鶏農家が存在していることを示している。

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## **Commercial Pig, Broiler and Laying Hen Farm Structure in China, 1996**

James R. Simpson, Youlong Shi, Ou Li, Weisheng Chen and Shuxia Liu

There are no comprehensive statistics on livestock structure in China although data may eventually become available from the agricultural census taken in January 1997. The census results were not available as of March 1999 at which time this article was written. (The term livestock structure in this context means data on the number of production units such as households, or others like state farms, non agriculture owned and run, etc., and the number of livestock including poultry, all by different sizes of production unit and offtake). This article concentrates on commercial size pig, broiler and laying hen operations. It provides a rich amount of information otherwise unavailable since the very limited census data now available only cover household units and do not include large size operations.

James R. Simpson obtained the raw data reported on during fieldwork in China in September 1998 under a grant from the Socio-Cultural Research Institute in Ryukoku University. They are derived from an unpublished survey carried out in early 1997 by the Animal Husbandry and Veterinary Bureau (AHVB) of the Ministry of Agriculture (MOA), Beijing, China. Mr. Weisheng Chen, a co-author of this article, was in charge of the survey that was directed by another co-author Mr. Youlong Shi. They also designed the survey. Officials from the Animal Husbandry and Veterinary Service (AHVS) bureaus at the county and township levels in each province carried out the interviews. The AHVS utilized their line agency statisticians to check the completed questionnaires. Overall, the survey shows there are a substantial number of large and very large size pig, broiler and laying hen farms in China.

## Commercial Pig Farms

There were nearly a half million commercial pig farms (those with 50 or more pigs) in 1996 (Table 1). Among them, 635 had 10,000 to 49,999 head, while 6 had 50,000 head or more. Twenty one percent of China's 477,014 commercial pig farms were located in Hunan province, 11 in Liaoning and 10 in Henan province (Appendix 1).

Table 1. Number of commercial pig farms, those with 50 or more pigs, by province in China, 1996

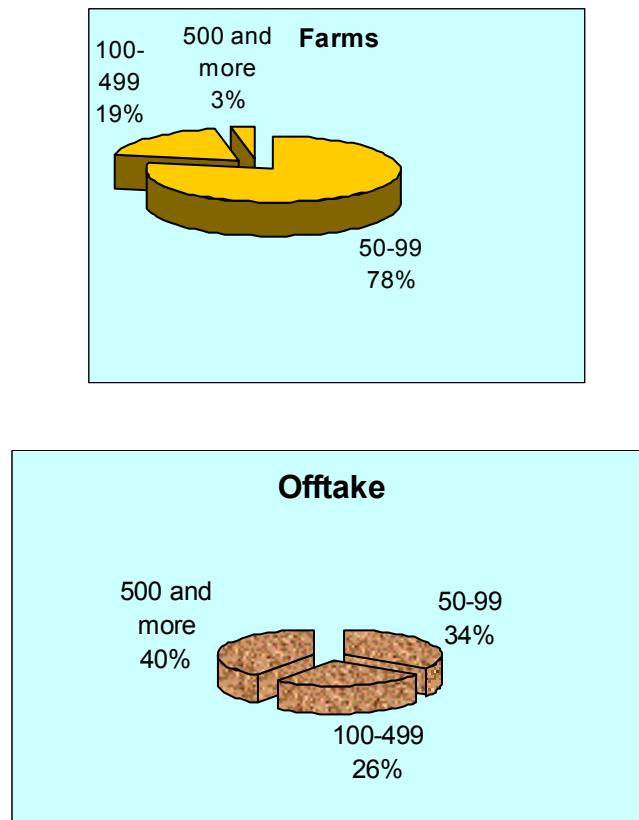
Province	Pigs per farm						Total	Percent
	50-99	100-499	500-2,999	3,000 9,999	10,000- 49,999	50,000 or greater		
Beijing			637	111	151		899	0.19
Tianjin	816	326	27	8			1,177	0.25
Hebei	10,821	2,990	435	24	7		14,277	2.99
Inner Mongolia	1,137	185	28	11	1		1,362	0.29
Shanxi	10,377	1,476	174	6	2		12,035	2.52
Liaoning	36,750	13,102	496	72	22		50,442	10.57
Jilin	24,424	3,707	379	22	1		28,533	5.98
Heilongjiang	8,751	1,596	275	39	10	1	10,672	2.24
Shanghai			354	105	88		547	0.11
Jiangsu	16,649	5,709	721	49	7		23,135	4.85
Zhejiang	8,801	4,607	630	98	23		14,159	2.97
Fujian	4,374	2,345	593	72	29		7,413	1.55
Jiangxi	12,680	1,704	300	52	15		14,751	3.09
Auhui	7,108	1,186	274	18	5		8,591	1.80
Shandong	22,664	5,419	1,100	183	56	1	29,423	6.17
Guangdong	28,496	10,923	1,177	162	97	2	40,857	8.57
Sichuan	7,016	1,265	104	14	1		8,400	1.76
Chongqing	18,222	251	26	1			18,500	3.88
Hunan	77,903	17,991	2,371	22	13		98,300	20.61
Hubei	11,516	2,128	818	75	28		14,565	3.05
Henan	39,624	6,808	603	127	59		47,221	9.90
Guangxi	16,283	4,916	702	92	15	2	22,010	4.61
Hainan	237	77	27	12	2		355	0.07
Guizhou	2,015	285	16	1			2,317	0.49
Shaanxi	1,640	356	29		1		2,026	0.42
Gansu	358	198	20	1			577	0.12
Qinghai	185	78	43	4	1		311	0.07
Ningxia	467	159	19	5			650	0.14
Xizang								NR
Yunnan	2,556	839	108	5	1		3,509	0.74
National	371,870	90,626	12,486	1,391	635	6	477,014	100.00
Percent	77.96	19.00	2.62	0.29	0.13	0.00	100.00	

Source: Unpublished report by the MOA, China

NR means not reported.

Another way to examine the data is by focusing on size of operation rather than on provinces. As expected, most commercial farms were in the smallest grouping, 50-99 head (Figure 1). Those size operations accounted for 78 percent of all commercial size farms, while those with 100-499 had 19 percent of the total (Table 1 and Appendix 2).

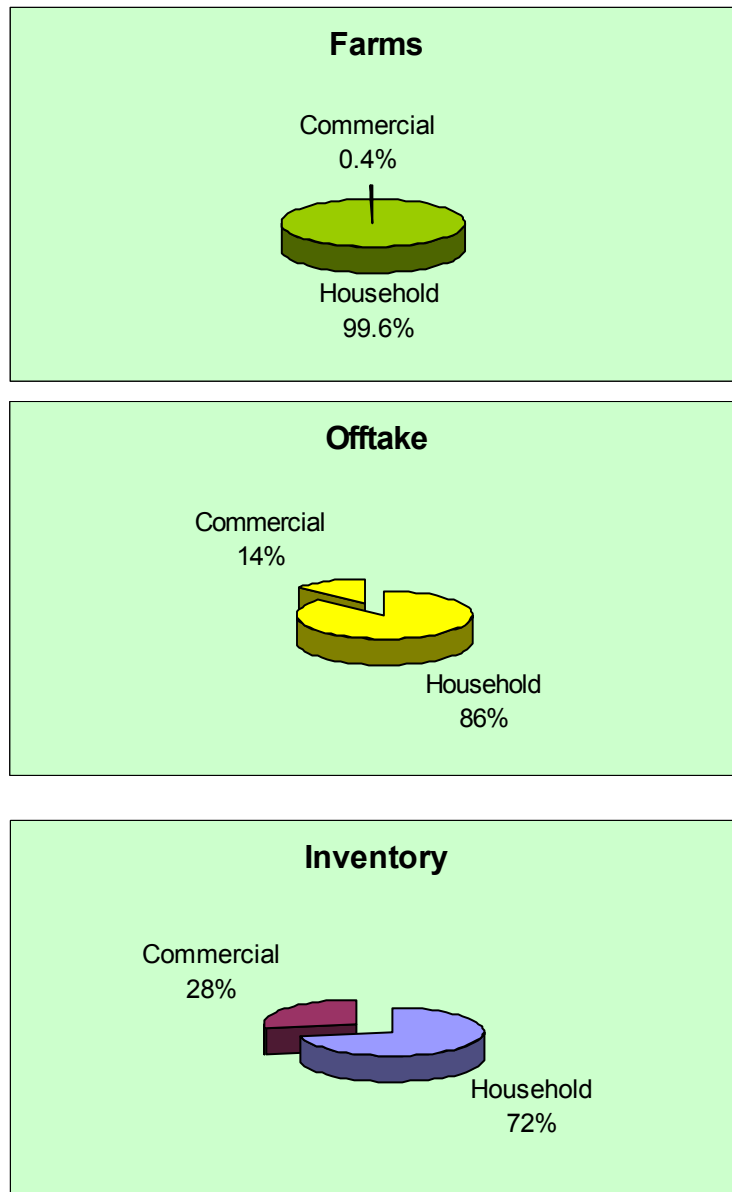
**Figure 1. Commercial pig farm and farm and offtake structure in China, 1996**



Offtake (annual number sold from the farm or slaughtered for use on the farm) data were also included in the pig and broiler survey results. Offtake on commercial size farms accounted for 13.6 percent of all pig offtake in China in 1996, 71 million head versus 526 million head (Figure 2 and Table 2). Beijing was the administrative region with the greatest percent of offtake by commercial units, 79 percent. Only 1.2 percent of offtake in Sichuan province was from commercial operations although that province had, by far, the largest total offtake of any province in 1996.

Pig offtake was much more scattered across farm sizes than were farm numbers, and the province orders also changed. For example, Guangdong and Hunan each accounted for 13 percent of all commercial size offtake in China in 1996, while Henan had 9 and Shandong had 8 percent of the national total (Appendix 3).

**Figure 2. Commercial versus household pig farms, offtake and inventory in China, 1996.**



The effect of greater productivity on larger size farms is clearly shown by comparing percent offtake to the number of farms in each size category. For example, whereas 78 percent of the commercial pig farms fell in the 50-99-size group, only 34 percent of the offtake were from those size farms (Figure 1). Only 3 percent of all

farms had 500 head or more (Table 1), yet these 4 categories of large and very large size farms accounted for 40 percent of offtake (Appendix 4).

Table 2. Offtake of pigs on commercial farms, those with 50 or more pigs by province in China, compared to total offtake, 1996

Province	Pigs per farm					50,000 or more	Total offtake		Farms with 50 pigs or more as a percent of total offtake
	50-99	100-499	500-2,999	3,000-9,999	10,000-49,999		farms with 50 pigs or more	Total offtake (1)	
	-----1,000 pigs-----								--Percent--
Beijing			885	464	1,441		2,790	3,553	78.53
Tianjin	143	153	110	90			496	1,731	28.65
Hebei	915	819	572	122	123		2,551	27,404	9.31
Inner Mongolia	88	41	26	48	12		215	6,399	3.36
Shanxi	1,031	425	148	26	20		1,650	6,519	25.31
Liaoning	1,925	1,250	394	182	277		4,028	16,406	24.55
Jilin	1,567	580	460	92	10		2,709	10,692	25.34
Heilongjiang	629	482	250	170	118	60	1,709	11,990	14.25
Shanghai			713	644	1,266		2,623	4,787	54.79
Jiangsu	1,276	1,064	697	210	140		3,387	28,326	11.96
Zhejiang	543	876	545	520	311		2,795	13,635	20.50
Fujian	487	850	767	693	322		3,119	14,012	22.26
Jiangxi	788	419	300	219	180		1,906	23,842	7.99
Auhui	482	329	141	79	81		1,112	18,977	5.86
Shandong	1,545	1,521	1,330	887	521	54	5,858	36,056	16.25
Guangdong	2,008	3,678	1,193	801	1,617	162	9,459	25,589	36.97
Sichuan	564	190	97	82	50		983	80,559	1.22
Chongqing	471	42	33	4			550		NR
Hunan	4,549	2,586	1,446	527	174		9,282	55,790	16.64
Hubei	1,002	571	832	415	343		3,163	32,407	9.76
Henan	3,049	1,215	737	598	645		6,244	32,922	18.97
Guangxi	1,019	1,067	632	438	201	102	3,459	28,543	12.12
Hainan	24	23	55	82	22		206	2,227	9.25
Guizhou	158	55	10	7			230	10,954	2.10
Shaanxi	151	67	23		14		255	8,274	3.08
Gansu	29	90	24	3			146	6,455	2.26
Qinghai	8	11	40	15	1		75	852	8.80
Ningxia	31	43	20	21			115	952	12.08
Xinjiang							0	1,538	NR
Yunnan	179	171	104	30	12		496	15,123	3.28
National	24,661	18,618	12,584	7,469	7,901	378	71,611	526,514	13.60
Percent	34.44	26.00	17.57	10.43	11.03	0.53	100.00		

Source: Unpublished report by the MOA, China

NR means not reported.

(1) As reported in the MOA survey.

## Commercial Broiler Farms

China had about 63,000 broiler farms with 10,000 or more birds in 1996 according to the survey (Table 3). There were 108 with a half million to one million birds, 79 with one million to 5 million, 6 with 5 to 10 million, and 2 with 10 million birds or more. Twenty eight percent of China's commercial broiler farms were found in Shandong province, 19 in Jilin and 14 in Guangdong province (Appendix 5). Almost all of the commercial broiler farms, 94 percent, fell in the 10,000-49,999 category (Figure 3). Another 4 percent were in the 50,000-99,999 grouping (Appendix 6).

Table 3. Number of commercial broiler farms, those with 10,000 or more birds, by province in China, 1996

Province	Broilers per farm							Total	Percent
	10,000-49,999	50,000-99,999	100,000-499,999	500,000-999,999	1,000,000-4,999,999	5,000,000-9,999,999	10,000,000 or more		
Beijing		22	1	8	20	1	1	53	0.08
Tianjin	129	1	5		1	2		138	0.22
Hebei	2,188	95	29		1			2,313	3.69
Inner Mongolia	412	37	22	1				472	0.75
Shanxi	26	4	1					31	0.05
Liaoning	6,861	66	7	2				6,936	11.05
Jilin	11,390	82	218	1	1			11,692	18.63
Heilongjiang	684	16	54	1	1			756	1.20
Shanghai	229	91	59	14	2		1	396	0.63
Jiangsu	1,945	92	28	2	2			2,069	3.30
Zhejiang	1,619	26	3	1				1,649	2.63
Fujian	569	20	9		1			599	0.95
Jiangxi	734	24	5					763	1.22
Auhui	596	44	19	2	1	1		663	1.06
Shandong	16,381	710	235	53	44			17,423	27.77
Guangdong	7,512	693	253	12	2	2		8,474	13.50
Sichuan	54							54	0.09
Chongqing	50	3						53	0.08
Hunan	1,806	43	6		1			1,856	2.96
Hubei	1,898	233	72	6	1			2,210	3.52
Henan	1,557	36	18	1	1			1,613	2.57
Guangxi	1,104	92	17	2				1,215	1.94
Hainan	844	12	2					858	1.37
Guizhou	41	7	9					57	0.09
Shaanxi	11	3		1				15	0.02
Gansu	28							28	0.04
Qinghai									NR
Ningxia	93	4						97	0.15
Xizang	166	2	2					170	0.27
Yunnan	87	9	1	1				98	0.16
National	59,014	2,467	1,075	108	79	6	2	62,751	100.00
Percent	94.04	3.93	1.71	0.17	0.13	0.01	0.00	100.00	

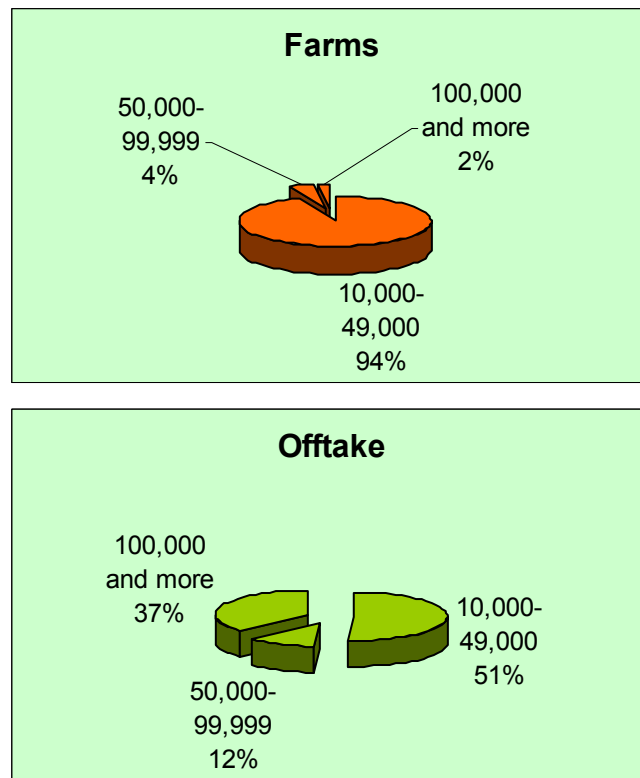
Source: Unpublished report by the MOA, China

NR means not reported.

Offtake results are also available for broilers. Commercial farms accounted for 39 percent of all birds marketed (or consumed by producing households) nationally in 1996, 1.6 billion birds compared with 4.1 billion nationally (Table 4). Shandong province was the leading commercial broiler producer, with 31 percent of commercial farm offtake and 23 percent of national offtake (Appendix 7). Guangdong followed with 17 and 15 percent, respectively.

A substantial amount of China's broiler offtake is derived from large and very large broiler operations. For example, farms with 50,000-99,999 birds, and those with 100,000-499,999 each accounted for 12 percent of offtake (Appendix 8). In all China, 61 percent of broiler offtake is from households and 39 percent from commercial operations (Figure 4).

**Figure 3. Commercial broiler farm and offtake structure in China, 1996**



Greater productivity on larger size farms is revealed by comparing percent offtake to the number of farms (Figure 3). For example, whereas 94 percent of commercial broiler farms fell in the 10,000-49,999-size group (Appendix 6), only 51 percent of the offtake was from those size farms (Appendix 8). In contrast, although the largest 4 size production units (50,000 birds or more) only comprised 0.32 percent of broiler operations, those 195 large and very large size type operations accounted for 25 percent of commercial offtake.

Table 4. Offtake of broilers on commercial farms, those with 10,000 birds or more, by province in China, 1996

Province	Broilers per farm						10,000,000 or more	Total offtake farms with 10,000 broiler or more	National offtake	Farms with 10,000 broilers or more as a percent of all national offtake
	10,000- 49,999	50,000- 99,999	100,000- 499,999	500,000- 999,999	1,000,000- 4,999,999	5,000,000- 10,999,999				
Beijing		1,826	300	4,350	20,000	7,000	16,700	50,176	51,679	97.09
Tianjin	2,523	85	891		3,000	20,000		26,499	20,410	129.83
Hebei	62,984	11,778	3,800		1,200			79,762	189,740	42.04
Inner Mongolia	6,172	3,561	4,010	640				14,383	16,861	85.30
Shanxi	453	242	300					995	3,383	29.41
Liaoning	63,272	4,914	1,505	1,600				71,291	227,880	31.28
Jilin	56,653	26,301	52,490	700	1,200			137,344	189,150	72.61
Heilongjiang	14,430	10,170	11,607	700	1,000			37,907	90,128	42.06
Shanghai	5,207	5,725	12,990	7,740	2,600		53,000	87,262	155,600	56.08
Jiangsu	29,141	5,564	4,612	1,500	2,400			43,217	231,590	18.66
Zhejiang	15,558	1,595	612	852				18,617	79,879	23.31
Fujian	6,731	1,300	1,515		4,350			13,896	88,480	15.71
Jiangxi	9,990	1,485	639					12,114	75,940	15.95
Auhui	13,827	3,264	3,086	1,250	2,300	5,000		28,727	101,280	28.36
Shandong	261,920	46,960	44,050	37,250	117,050			507,230	932,550	54.39
Guangdong	128,380	40,388	37,859	2,413	10,230	59,100		278,370	632,570	44.01
Sichuan	850							850	170,000	0.50
Chongqing	938	235						1,173	2,500	46.92
Hunan	32,387	3,331	1,093		3,200			40,011	109,890	36.41
Hubei	44,380	15,350	12,450	3,700	2,000			77,880	225,190	34.58
Henan	24,751	2,520	3,397	500	1,000			32,168	142,210	22.62
Guangxi	22,401	4,759	2,410	1,050				30,620	249,210	12.29
Hainan	14,647	720	460					15,827	48,352	32.73
Guizhou	554	205	480					1,239	17,992	6.89
Shaanxi	300	270		600				1,170	5,512	21.23
Gansu	131							131	8,011	1.64
Qinghai										NR
Ningxia	1,552	232						1,784	6,006	29.70
Xinjiang	3,326	150	530					4,006	19,854	20.18
Yunnan	1,681	661	120	720				3,182	26,882	11.84
National	825,139	193,591	201,206	65,565	171,530	91,100	69,700	1,617,831	4,118,729	39.28
Percent	51.00	11.97	12.44	4.05	10.60	5.63	4.31	100.00		

Source: Unpublished report by the MOA, China.  
Nr means not reported.

## Commercial Laying Hens

There were about a quarter million commercial laying hen farms (those with 1,000 birds or more) in China in 1996 according to the survey (Table 5). Of these, 270 had 200,000 to 299,999 birds, and a substantial number, 40, were in the largest category of 500,000 birds or more. Twenty three percent of China's commercial egg farms were found in Hebei province, 21 in Shandong and 14 percent in Jiangsu province (Appendix 9).

Almost all of the commercial egg farms, 97 percent, fell in the 1,000-9,999-bird category (Appendix 10). Another 2.3 percent were in the 10,000-49,999 grouping.

Offtake results have little meaning for laying hens and thus inventory data were included in the survey. Commercial farms accounted for 24 percent of national laying hen inventory in 1996; 625 million birds compared with 2.6 billion nationally

(Table 6). Shandong, Hebei and Henan were the leaders, in that order, for both commercial and national inventory (Appendix 11).

**Figure 4. Commercial versus household broiler farms, offtake and inventory in China, 1996.**

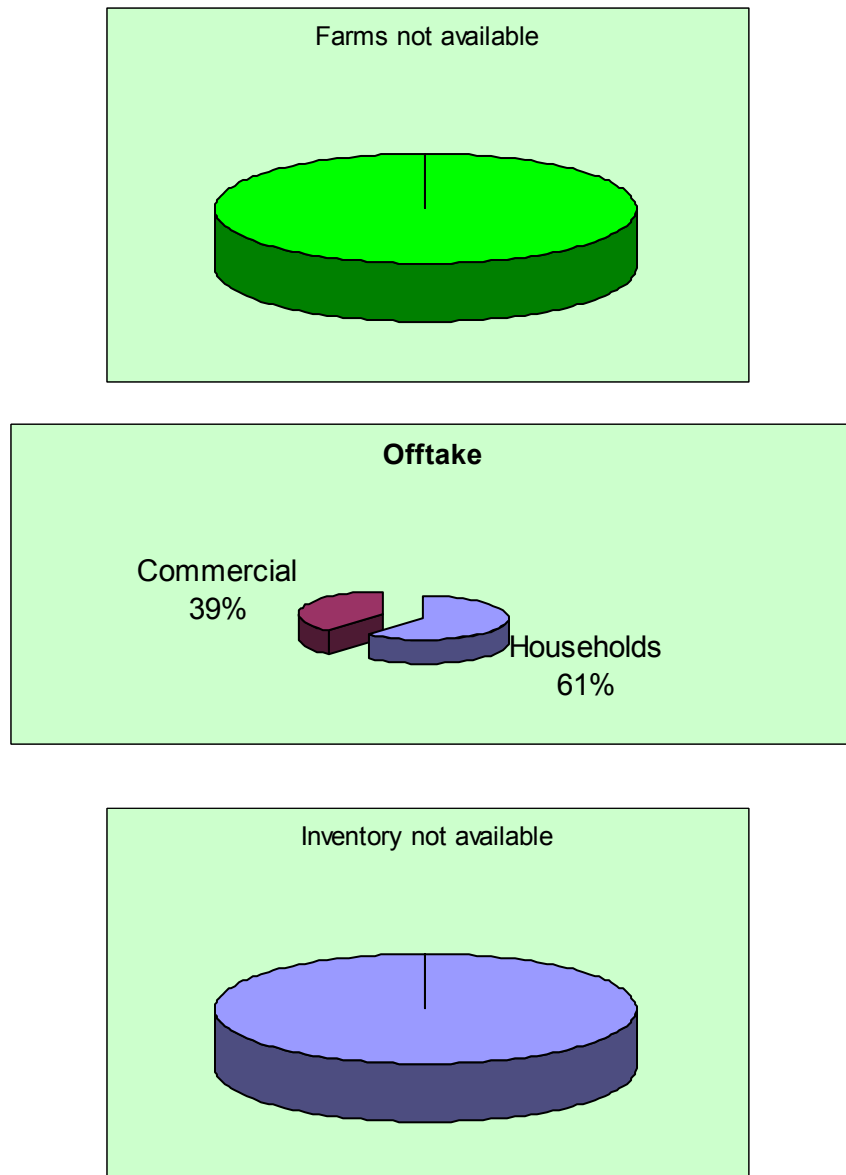


Table 5. Number of commercial laying hen farms, those with 1,000 or more hens, by province in China, 1996

Province	Laying hens per farm							Total	Percent
	1,000-9,999	10,000-49,999	50,000-99,999	100,000-199,999	200,000-299,999	300,000-499,999	500,000 and more		
Beijing		315	76	37	130		10	568	0.23
Tianjin	2,509	130	9	3	10			2,661	1.06
Hebei	57,705	912	15	6				58,638	23.32
Inner Mongolia	1,289	40	3	1				1,333	0.53
Shanxi	8,658	155	6	3				8,822	3.51
Liaoning	21,310	605	21	5	10		10	21,961	8.73
Jilin	6,091	149	14	1	10			6,265	2.49
Heilongjiang	3,411	165	8	3	10			3,597	1.43
Shanghai	67	50	2	1				120	0.05
Jiangsu	35,411	465	50	11	20			35,957	14.30
Zhejiang	5,540	36	1	1				5,578	2.22
Fujian	892	154	11	1				1,058	0.42
Jiangxi	2,738	25	4	1				2,768	1.10
Auhui	2,464	82	5	1				2,552	1.01
Shandong	51,635	1,282	56	11	20			53,004	21.08
Guangdong	210	45	8	3	10	10	20	306	0.12
Sichuan	2,189	84			10			2,283	0.91
Chongqing	655	15						670	0.27
Hunan	3,555	104	1					3,660	1.46
Hubei	4,866	116	9	6	10			5,007	1.99
Henan	28,517	674	65	25	20			29,301	11.65
Guangxi	153	32	1	1				187	0.07
Hainan	36	5		2				43	0.02
Guizhou	65	4		1				70	0.03
Shaanxi	3,172	47	1					3,220	1.28
Gansu	194	13						207	0.08
Qinghai	19	1			10			30	0.01
Ningxia	453	60						513	0.20
Xinjiang	721	68	9	4				802	0.32
Yunnan	250	32	2	1				285	0.11
National	244,775	5,865	377	129	270	10	40	251,466	100.00
Percent	97.34	2.33	0.15	0.05	0.11	0.00	0.02	100.00	

Source: Unpublished report by the MOA, China.

Ninety seven percent of commercial egg farms fell in the 1,000-9,999 group (Figure 5). However, only 79 percent of inventory were on those size farms (Appendix 12). In contrast, although only 1.8 percent of broiler operations fell in the largest 4-size production units (100,000 birds or more), those 449 large and very large size operations accounted for 3.9 percent of inventory (Table 3). The importance of commercial laying hen operations is revealed in Figure 6 which shows that 24 percent of laying hen inventory was on commercial size farms compared with 76 percent on household units.

Table 6. Inventory of commercial laying hens, those on farms with 1,000 or more hens, by province in China, 1996

Province	Laying hens per farm						Total inventory 1,000 hens or more	Total national inventory	Farms with 1,000 hens or more as a percent, national inventory	
	1,000- 9,999	10,000 49,999	50,000 99,999	100,000 199,999	200,000 299,999	300,000- 499,999 500,000 and more				Percent
Beijing		4,210	3,444	3,686	2,783		500	14,623	23,290	62.8
Tianjin	5,555	2,293	520	460	200			9,028	17,494	51.6
Hebei	127,150	10,769	895	790				139,604	377,675	37.0
Inner Mongolia	2,184	674	170	107				3,135	27,043	11.6
Shanxi	14,868	2,271	277	420				17,836	69,006	25.8
Liaoning	36,920	8,404	1,345	638	300		800	48,407	124,811	38.8
Jilin	10,507	2,195	872	178	200			13,952	73,018	19.1
Heilongjiang	7,542	2,442	459	376	280			11,099	64,835	17.1
Shanghai	1,096	2,092	335	225				3,748	7,365	50.9
Jiangsu	55,738	6,526	1,719	1,465	485			65,933	281,537	23.4
Zhejiang	8,882	512	50	137				9,581	19,033	50.3
Fujian	1,217	3,166	587	122				5,092	17,094	29.8
Jiangxi	1,884	645	260	120				2,909	59,313	4.9
Auhui	4,967	900	304	96				6,267	97,770	6.4
Shandong	120,790	19,876	3,708	1,368	400			146,142	447,042	32.7
Guangdong	710	1,091	506	380	210	350	1,471	4,718	5,000	94.4
Sichuan	5,146	1,332			200			6,678	121,385	5.5
Chongqing	1,612	231						1,843	3,190	57.8
Hunan	5,451	1,391	53					6,895	62,029	11.1
Hubei	10,132	2,470	570	720	200			14,092	187,207	7.5
Henan	56,478	10,290	4,009	2,933	430			74,140	310,379	23.9
Guangxi	737	560	50	150				1,497	25,825	5.8
Hainan	120	70		301				491	684	71.8
Guizhou	181	70		160				411	15,100	2.7
Shaanxi	6,423	553	73					7,049	55,524	12.7
Gansu	494	378						872	40,303	2.2
Qinghai	30	12			217			259	2,055	12.6
Ningxia	2,497	1,102						3,599	8,234	43.7
Xinjiang	2,115	1,313	588	501				4,517	13,000	34.7
Yunnan	698	482	140	120				1,440	26,390	5.5
Total	492,124	88,320	20,934	15,453	5,905	350	2,771	625,857	2,582,631	24.2
Percent	78.63	14.11	3.34	2.47	0.94	0.06	0.44	100.00		

Source: Unpublished survey by the MOA, China.

Figure 5. Commercial layer farm and inventory structure in China, 1996

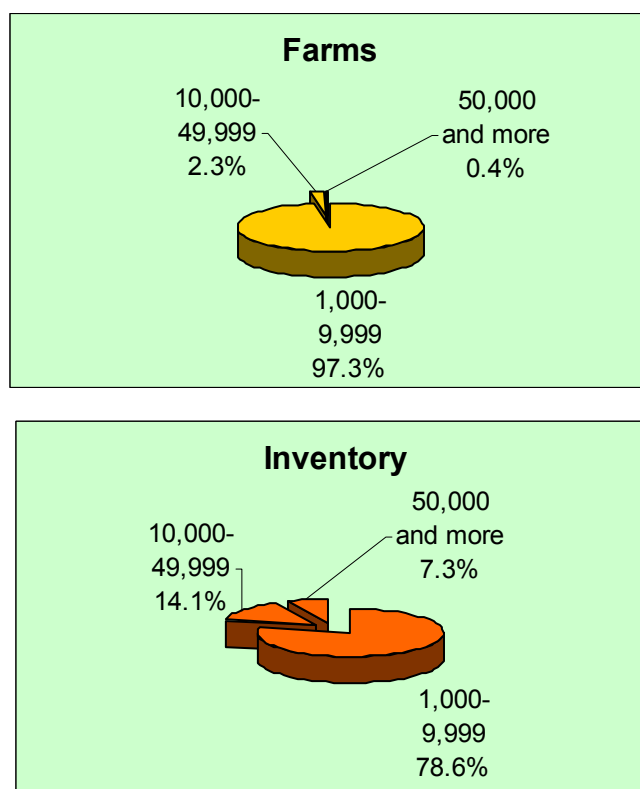


Table 7. Summary of commercial pig, broiler and laying hen farms compared with commercial offtake and inventory, MOA survey, China, 1996

	Farms	Offtake	Inventory
	-----Percent-----		
	Pigs		
50-99	77.96	34.44	
100-499	19.00	26.00	
500-2,999	2.62	17.57	
3,000-9,999	0.29	10.43	
10,000-49,999	0.13	11.03	
50,000 and more	0.00	0.53	
	100.00	100.00	
	Broilers		
10,000-49,000	94.04	51.00	
50,000-99,999	3.93	11.97	
100,000-499,999	1.71	12.44	
500,000-999,999	0.17	4.05	
1,000,000-4,999,999	0.13	10.60	
5,000,000-9,999,999	0.01	5.63	
10,000,000 and more	0.00	4.31	
	100.00	100.00	
	Laying hens		
1,000-9,999	97.34		78.63
10,000-49,999	2.33		14.11
50,000-99,999	0.15		3.34
100,000-199,999	0.05		2.47
200,000-299,999	0.11		0.94
300,000-499,999	0.00		0.06
500,000 and more	0.02		0.44
	100.00		100.00

Source: Tables 1-6.

### Summary and Conclusions

This article contains results of a survey carried out in early 1997 by China's Ministry of Agriculture on commercial pig, broiler and laying hen operations. Data are for 1996. The survey provides a rich trove of information otherwise unavailable since the limited census data available only cover household units and do not include large size operations. Commercial units are defined as pig farms with 50 and more head, broiler units with 10, 000 and more birds, and laying hen operations with 1,000 and more birds.

The survey results on commercial operations clearly show the productivity advantages from increasing size. In the case of pigs, although 78 percent of all commercial farms fell in the 50-99 head category, only 34 percent of offtake came from these size units (Figure 1). Slightly less than 3 percent of all pig farms had 500 head or more, yet those large and very large size type operations accounted for 40 percent of offtake (Table 7).

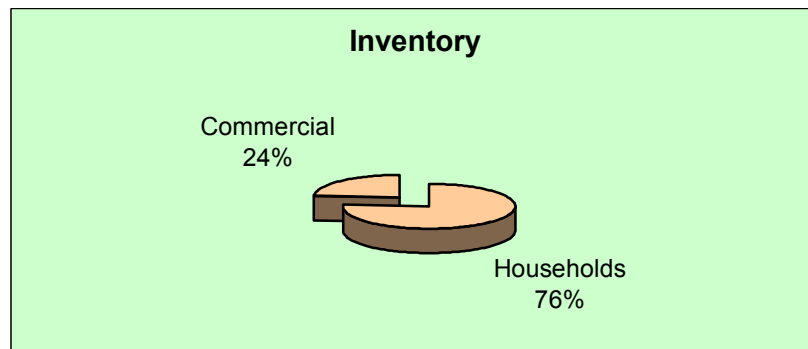
Regarding commercial broilers, whereas 94 percent of farms fell in the 10,000-49,999-size group, only 51 percent of the offtake were from those size units (Figure 3). In contrast, although the largest units with 50,000 birds or more only comprised 0.31 percent of broiler farms, those 195 large and very large size type operations accounted for 25 percent of commercial offtake (Table 7).

In the case of commercial egg farms, 97 percent fell in the 1,000-9,999 group, but only 79 percent of inventory were on those size farms ( Table 7 and Figure 5).

There were no comprehensive national statistics available on either livestock or crop agriculture from the Government of China's 1997 census (which contained both household and commercial units) at the time this article was prepared (June 1999). It seems that comprehensive census results will not be available until mid 2000.

Anecdotal information from newspapers, commercial and official sources and observation leads to the conclusion that structure in the pig, broiler and laying hen industries has changed greatly in the past 5-10 years and that rapid commercialization will continue. A very useful project would be to review structural changes that have taken place in European and North American pig, broiler and laying hen industries over the past 40 or so years as one means to project changes that will take place in China.

**Figure 6. Commercial versus household layer farms, offtake and inventory in China, 1996.**



Appendix 1. Percent of commercial pig farms, those with 50 or more pigs, by province in China, 1996

Province	Pigs per farm						National
	50-99	100-499	500-2,999	3,000-9,999	10,000-49,999	50,000 or more	
Beijing	0	0	5	8	24	0	0.19
Tianjin	0	0	0	1	0	0	0.25
Hebei	3	3	3	2	1	0	2.99
Inner Mongolia	0	0	0	1	0	0	0.29
Shanxi	3	2	1	0	0	0	2.52
Liaoning	10	14	4	5	3	0	10.57
Jilin	7	4	3	2	0	0	5.98
Heilongjiang	2	2	2	3	2	17	2.24
Shanghai	0	0	3	8	14	0	0.11
Jiangsu	4	6	6	4	1	0	4.85
Zhejiang	2	5	5	7	4	0	2.97
Fujian	1	3	5	5	5	0	1.55
Jiangxi	3	2	2	4	2	0	3.09
Auhui	2	1	2	1	1	0	1.80
Shandong	6	6	9	13	9	17	6.17
Guangdong	8	12	9	12	15	33	8.57
Sichuan	2	1	1	1	0	0	1.76
Chongqing	5	0	0	0	0	0	3.88
Hunan	21	20	19	2	2	0	20.61
Hubei	3	2	7	5	4	0	3.05
Henan	11	8	5	9	9	0	9.90
Guangxi	4	5	6	7	2	33	4.61
Hainan	0	0	0	1	0	0	0.07
Guizhou	1	0	0	0	0	0	0.49
Shaanxi	0	0	0	0	0	0	0.42
Gansu	0	0	0	0	0	0	0.12
Qinghai	0	0	0	0	0	0	0.07
Ningxia	0	0	0	0	0	0	0.14
Xizang							NR
Yunnan	1	1	1	0	0	0	0.74
Total	100	100	100	100	100	100	100.00

Source: Unpublished survey by the MOA, China.

NR means not reported.

Appendix 2. Percent of commercial pig farms, those with 50 or more pigs by operation in China, 1996

Province	Pigs per farm						Total
	50-99	100-499	500-2,999	3,000-9,999	10,000-49,999	50,000 or more	
Beijing	0	0	71	12	17	0	100
Tianjin	69	28	2	1	0	0	100
Hebei	76	21	3	0	0	0	100
Inner Mongolia	83	14	2	1	0	0	100
Shanxi	86	12	1	0	0	0	100
Liaoning	73	26	1	0	0	0	100
Jilin	86	13	1	0	0	0	100
Heilongjiang	82	15	3	0	0	0	100
Shanghai	0	0	65	19	16	0	100
Jiangsu	72	25	3	0	0	0	100
Zhejiang	62	33	4	1	0	0	100
Fujian	59	32	8	1	0	0	100
Jiangxi	86	12	2	0	0	0	100
Auhui	83	14	3	0	0	0	100
Shandong	77	18	4	1	0	0	100
Guangdong	70	27	3	0	0	0	100
Sichuan	84	15	1	0	0	0	100
Chongching	98	1	0	0	0	0	100
Hunan	79	18	2	0	0	0	100
Hubei	79	15	6	1	0	0	100
Henan	84	14	1	0	0	0	100
Guangxi	74	22	3	0	0	0	100
Hainan	67	22	8	3	1	0	100
Guizhou	87	12	1	0	0	0	100
Shaanxi	81	18	1	0	0	0	100
Gansu	62	34	3	0	0	0	100
Qinghai	59	25	14	1	0	0	100
Ningxia	72	24	3	1	0	0	100
Xizang							NR
Yunnan	73	24	3	0	0	0	100
National	77.96	19.00	2.62	0.29	0.13	0.00	100.00

Source: Unpublished survey by the MOA, China.

NR means not reported.

Appendix 3. Percent of pig offtake on commercial farms, those with 50 or more pigs, by province in China, 1996

Province	Pigs per farm						National
	50-99	100-499	500-2,999	3,000-9,999	10,000-49,999	50,000 or more	
Beijing	0	0	7	6	18	0	3.90
Tianjin	1	1	1	1	0	0	0.69
Hebei	4	4	5	2	2	0	3.56
Inner Mongolia	0	0	0	1	0	0	0.30
Shanxi	4	2	1	0	0	0	2.30
Liaoning	8	7	3	2	4	0	5.62
Jilin	6	3	4	1	0	0	3.78
Heilongjiang	3	3	2	2	1	16	2.39
Shanghai	0	0	6	9	16	0	3.66
Jiangsu	5	6	6	3	2	0	4.73
Zhejiang	2	5	4	7	4	0	3.90
Fujian	2	5	6	9	4	0	4.36
Jiangxi	3	2	2	3	2	0	2.66
Auhui	2	2	1	1	1	0	1.55
Shandong	6	8	11	12	7	14	8.18
Guangdong	8	20	9	11	20	43	13.21
Sichuan	2	1	1	1	1	0	1.37
Chongqing	2	0	0	0	0	0	0.77
Hunan	18	14	11	7	2	0	12.96
Hubei	4	3	7	6	4	0	4.42
Henan	12	7	6	8	8	0	8.72
Guangxi	4	6	5	6	3	27	4.83
Hainan	0	0	0	1	0	0	0.29
Guizhou	1	0	0	0	0	0	0.32
Shaanxi	1	0	0	0	0	0	0.36
Gansu	0	0	0	0	0	0	0.20
Qinghai	0	0	0	0	0	0	0.10
Ningxia	0	0	0	0	0	0	0.16
Xinjiang							NR
Yunnan	1	1	1	0	0	0	0.69
Total	100	100	100	100	100	100	100.00

Source: Table 2.

Appendix 4. Percent of pig offtake on commercial farms, those with 50 or more pigs by size of operation in China.

Province	Pigs per farm						Total
	50-99	100-499	500-2,999	3,000-9,999	10,000-49,000	50,000 or more	
Beijing	0	0	32	17	52	0	100
Tianjin	29	31	22	18	0	0	100
Hebei	36	32	22	5	5	0	100
Inner Mongolia	41	19	12	22	6	0	100
Shanxi	62	26	9	2	1	0	100
Liaoning	48	31	10	5	7	0	100
Jilin	58	21	17	3	0	0	100
Heilongjiang	37	28	15	10	7	4	100
Shanghai	0	0	27	25	48	0	100
Jiangsu	38	31	21	6	4	0	100
Zhejiang	19	31	19	19	11	0	100
Fujian	16	27	25	22	10	0	100
Jiangxi	41	22	16	11	9	0	100
Auhui	43	30	13	7	7	0	100
Shandong	26	26	23	15	9	1	100
Guangdong	21	39	13	8	17	2	100
Sichuan	57	19	10	8	5	0	100
Chongqing	86	8	6	1	0	0	100
Hunan	49	28	16	6	2	0	100
Hubei	32	18	26	13	11	0	100
Henan	49	19	12	10	10	0	100
Guangxi	29	31	18	13	6	3	100
Hainan	12	11	27	40	11	0	100
Guizhou	69	24	4	3	0	0	100
Shaanxi	59	26	9	0	5	0	100
Gansu	20	62	16	2	0	0	100
Qinghai	11	15	53	20	1	0	100
Ningxia	27	37	17	18	0	0	100
Xinjiang							NR
Yunnan	36	34	21	6	2	0	100
National	34.44	26.00	17.57	10.43	11.03	0.53	100

Source: Table 2.

NR means not reported.

Appendix 5. Percent of commercial broiler farms, those with 10,000 or more birds, by province in China, 1996

Province	Broilers per farm							National
	10,000-49,999	50,000-99,999	100,000-499,999	500,000-999,999	1,000,000-4,999,999	5,000,000-9,999,999	10,000,000 or more	
Beijing	0	1	0	7	25	17	50	0.08
Tianjin	0	0	0	0	1	33	0	0.22
Hebei	4	4	3	0	1	0	0	3.69
Inner Mongolia	1	1	2	1	0	0	0	0.75
Shanxi	0	0	0	0	0	0	0	0.05
Liaoning	12	3	1	2	0	0	0	11.05
Jilin	19	3	20	1	1	0	0	18.63
Heilongjiang	1	1	5	1	1	0	0	1.20
Shanghai	0	4	5	13	3	0	50	0.63
Jiangsu	3	4	3	2	3	0	0	3.30
Zhejiang	3	1	0	1	0	0	0	2.63
Fujian	1	1	1	0	1	0	0	0.95
Jiangxi	1	1	0	0	0	0	0	1.22
Auhui	1	2	2	2	1	17	0	1.06
Shandong	28	29	22	49	56	0	0	27.77
Guangdong	13	28	24	11	3	33	0	13.50
Sichuan	0	0	0	0	0	0	0	0.09
Chongching	0	0	0	0	0	0	0	0.08
Hunan	3	2	1	0	1	0	0	2.96
Hubei	3	9	7	6	1	0	0	3.52
Henan	3	1	2	1	1	0	0	2.57
Guangxi	2	4	2	2	0	0	0	1.94
Hainan	1	0	0	0	0	0	0	1.37
Guizhou	0	0	1	0	0	0	0	0.09
Shaanxi	0	0	0	1	0	0	0	0.02
Gansu	0	0	0	0	0	0	0	0.04
Qinghai								NR
Ningxia	0	0	0	0	0	0	0	0.15
Xizang	0	0	0	0	0	0	0	0.27
Yunnan	0	0	0	1	0	0	0	0.16
Total	100	100	100	100	100	100	100	100.00

Source: Table 3.

NR means not reported.

Appendix 6. Percent of commercial broiler farms, those with 10,000 or more birds, by operation in China, 1996

Province	Broilers per farm							Total
	10,000-49,999	50,000-99,999	100,000-499,999	500,000-999,999	1,000,000-4,999,999	5,000,000-9,999,999	10,000,000 or more	
Beijing	0	42	2	15	38	2	2	100
Tianjin	93	1	4	0	1	1	0	100
Hebei	95	4	1	0	0	0	0	100
Inner Mongolia	87	8	5	0	0	0	0	100
Shanxi	84	13	3	0	0	0	0	100
Liaoning	99	1	0	0	0	0	0	100
Jilin	97	1	2	0	0	0	0	100
Heilongjiang	90	2	7	0	0	0	0	100
Shanghai	58	23	15	4	1	0	0	100
Jiangsu	94	4	1	0	0	0	0	100
Zhejiang	98	2	0	0	0	0	0	100
Fujian	95	3	2	0	0	0	0	100
Jiangxi	96	3	1	0	0	0	0	100
Auhui	90	7	3	0	0	0	0	100
Shandong	94	4	1	0	0	0	0	100
Guangdong	89	8	3	0	0	0	0	100
Sichuan	100	0	0	0	0	0	0	100
Chongching	94	6	0	0	0	0	0	100
Hunan	97	2	0	0	0	0	0	100
Hubei	86	11	3	0	0	0	0	100
Henan	97	2	1	0	0	0	0	100
Guangxi	91	8	1	0	0	0	0	100
Hainan	98	1	0	0	0	0	0	100
Guizhou	72	12	16	0	0	0	0	100
Shaanxi	73	20	0	7	0	0	0	100
Gansu	100	0	0	0	0	0	0	100
Qinghai								NR
Ningxia	96	4	0	0	0	0	0	100
Xizang	98	1	1	0	0	0	0	100
Yunnan	89	9	1	1	0	0	0	100
National	94.04	3.93	1.71	0.17	0.13	0.01	0.00	100.00

Source: Table 3.

NR means not reported.

Appendix 7. Percent of broiler offtake on commercial farms, those with 10,000 or more birds, by province in China, 1996

Province	Broilers per farm							Total offtake farms with 10,000 broiler or more	National offtake
	10,000- 49,999	50,000- 99,999	100,000- 499,999	500,000- 999,999	1,000,000- 4,999,999	5,000,000- 10,999,999	10,000,000 or more		
Beijing	0	1	0	7	12	8	24	3.10	1.25
Tianjin	8	0	0	0	2	22	0	1.64	0.50
Hebei	1	6	2	0	1	0	0	4.93	4.61
Inner Mongolia	0	2	2	1	0	0	0	0.89	0.41
Shanxi	0	0	0	0	0	0	0	0.06	0.08
Liaoning	8	3	1	2	0	0	0	4.41	5.53
Jilin	7	14	26	1	1	0	0	8.49	4.59
Heilongjiang	2	5	6	1	1	0	0	2.34	2.19
Shanghai	1	3	6	12	2	0	76	5.39	3.78
Jiangsu	4	3	2	2	1	0	0	2.67	5.62
Zhejiang	2	1	0	1	0	0	0	1.15	1.94
Fujian	1	1	1	0	3	0	0	0.86	2.15
Jiangxi	1	1	0	0	0	0	0	0.75	1.84
Auhui	2	2	2	2	1	5	0	1.78	2.46
Shandong	32	24	22	57	68	0	0	31.35	22.64
Guangdong	16	21	19	4	6	65	0	17.21	15.36
Sichuan	0	0	0	0	0	0	0	0.05	4.13
Chongching	0	0	0	0	0	0	0	0.07	0.06
Hunan	4	2	1	0	2	0	0	2.47	2.67
Hubei	5	8	6	6	1	0	0	4.81	5.47
Henan	3	1	2	1	1	0	0	1.99	3.45
Guangxi	3	2	1	2	0	0	0	1.89	6.05
Hainan	2	0	0	0	0	0	0	0.98	1.17
Guizhou	0	0	0	0	0	0	0	0.08	0.44
Shaanxi	0	0	0	1	0	0	0	0.07	0.13
Gansu	0	0	0	0	0	0	0	0.01	0.19
Qinghai									NR
Ningxia	0	0	0	0	0	0	0	0.11	0.15
Xinjiang	0	0	0	0	0	0	0	0.25	0.48
Yunnan	0	0	0	1	0	0	0	0.20	0.65
Total	100	100	100	100	100	100	100	100.00	100.00

Source: Table 6.

NR means not reported.

Appendix 8. Percent of broiler offtake on commercial farms, those with 10,000 or more birds, by size of operation in China, 1996

Province	Broilers per farm							Total
	10,000-49,999	50,000-99,999	100,000-499,999	500,000-999,999	1,000,000-4,999,999	5,000,000-10,999,999	10,000,000 or more	
Beijing	0	4	1	9	40	14	33	100
Tianjin	10	0	3	0	11	75	0	100
Hebei	79	15	5	0	2	0	0	100
Inner Mongolia	43	25	28	4	0	0	0	100
Shanxi	46	24	30	0	0	0	0	100
Liaoning	89	7	2	2	0	0	0	100
Jilin	41	19	38	1	1	0	0	100
Heilongjiang	38	27	31	2	3	0	0	100
Shanghai	6	7	15	9	3	0	61	100
Jiangsu	67	13	11	3	6	0	0	100
Zhejiang	84	9	3	5	0	0	0	100
Fujian	48	9	11	0	31	0	0	100
Jiangxi	82	12	5	0	0	0	0	100
Auhui	48	11	11	4	8	17	0	100
Shandong	52	9	9	7	23	0	0	100
Guangdong	46	15	14	1	4	21	0	100
Sichuan	100	0	0	0	0	0	0	100
Chongching	80	20	0	0	0	0	0	100
Hunan	81	8	3	0	8	0	0	100
Hubei	57	20	16	5	3	0	0	100
Henan	77	8	11	2	3	0	0	100
Guangxi	73	16	8	3	0	0	0	100
Hainan	93	5	3	0	0	0	0	100
Guizhou	45	17	39	0	0	0	0	100
Shaanxi	26	23	0	51	0	0	0	100
Gansu	100	0	0	0	0	0	0	100
Qinghai								NR
Ningxia	87	13	0	0	0	0	0	100
Xinjiang	83	4	13	0	0	0	0	100
Yunnan	53	21	4	23	0	0	0	100
National	51.00	11.97	12.44	4.05	10.60	5.63	4.31	100

Source: Table 4.

NR means not reported.

Appendix 9. Percent of commercial laying hen farms, those with 1,000 or more hens by province in China, 1996

Province	Laying hens per farm							National
	1,000- 9,999	10,000 49,999	50,000 99,999	100,000 199,999	200,000 299,999	300,000- 499,999	500,000 and more	
Beijing	0	5	20	29	48	0	25	0.23
Tianjin	1	2	2	2	4	0	0	1.06
Hebei	24	16	4	5	0	0	0	23.32
Inner Mongolia	1	1	1	1	0	0	0	0.53
Shanxi	4	3	2	2	0	0	0	3.51
Liaoning	9	10	6	4	4	0	25	8.73
Jilin	2	3	4	1	4	0	0	2.49
Heilongjiang	1	3	2	2	4	0	0	1.43
Shanghai	0	1	1	1	0	0	0	0.05
Jiangsu	14	8	13	9	7	0	0	14.30
Zhejiang	2	1	0	1	0	0	0	2.22
Fujian	0	3	3	1	0	0	0	0.42
Jiangxi	1	0	1	1	0	0	0	1.10
Anhui	1	1	1	1	0	0	0	1.01
Shandong	21	22	15	9	7	0	0	21.08
Guangdong	0	1	2	2	4	100	50	0.12
Sichuan	1	1	0	0	4	0	0	0.91
Chongqing	0	0	0	0	0	0	0	0.27
Hunan	1	2	0	0	0	0	0	1.46
Hubei	2	2	2	5	4	0	0	1.99
Henan	12	11	17	19	7	0	0	11.65
Guangxi	0	1	0	1	0	0	0	0.07
Hainan	0	0	0	2	0	0	0	0.02
Guizhou	0	0	0	1	0	0	0	0.03
Shaanxi	1	1	0	0	0	0	0	1.28
Gansu	0	0	0	0	0	0	0	0.08
Qinghai	0	0	0	0	4	0	0	0.01
Ningxia	0	1	0	0	0	0	0	0.20
Xinjiang	0	1	2	3	0	0	0	0.32
Yunnan	0	1	1	1	0	0	0	0.11
Total	100	100	100	100	100	100	100	100.00

Source: Table 5.

Appendix 10. Percent of commercial laying hen farms, those with 1,000 or more hens, by operation in China, 1996

Province	Laying hens per farm							Total
	1,000-9,999	10,000-49,999	50,000-99,999	100,000-199,999	200,000-299,999	300,000-499,999	500,000 and more	
Beijing	0	55	13	7	23	0	2	100
Tianjin	94	5	0	0	0	0	0	100
Hebei	98	2	0	0	0	0	0	100
Inner Mongolia	97	3	0	0	0	0	0	100
Shanxi	98	2	0	0	0	0	0	100
Liaoning	97	3	0	0	0	0	0	100
Jilin	97	2	0	0	0	0	0	100
Heilongjiang	95	5	0	0	0	0	0	100
Shanghai	56	42	2	1	0	0	0	100
Jiangsu	98	1	0	0	0	0	0	100
Zhejiang	99	1	0	0	0	0	0	100
Fujian	84	15	1	0	0	0	0	100
Jiangxi	99	1	0	0	0	0	0	100
Auhui	97	3	0	0	0	0	0	100
Shandong	97	2	0	0	0	0	0	100
Guangdong	69	15	3	1	3	3	7	100
Sichuan	96	4	0	0	0	0	0	100
Chongching	98	2	0	0	0	0	0	100
Hunan	97	3	0	0	0	0	0	100
Hubei	97	2	0	0	0	0	0	100
Henan	97	2	0	0	0	0	0	100
Guangxi	82	17	1	1	0	0	0	100
Hainan	84	12	0	5	0	0	0	100
Guizhou	93	6	0	1	0	0	0	100
Shaanxi	99	1	0	0	0	0	0	100
Gansu	94	6	0	0	0	0	0	100
Qinghai	63	3	0	0	33	0	0	100
Ningxia	88	12	0	0	0	0	0	100
Xinjiang	90	8	1	0	0	0	0	100
Yunnan	88	11	1	0	0	0	0	100
National	97.34	2.33	0.15	0.05	0.11	0.00	0.02	100.00

Source: Table 5.

Appendix 11. Percent of commercial laying hen inventory, those on farms with 1,000 hens or more, by province in China, 1996

Province	Laying hens per farm							Total inventory 1,000 hens or more	National inventory
	1,000- 9,999	10,000 49,999	50,000 99,999	100,000 199,999	200,000 299,999	300,000- 499,999	500,000 and more		
Beijing	0	5	16	24	47	0	18	2.34	0.90
Tianjin	1	3	2	3	3	0	0	1.44	0.68
Hebei	26	12	4	5	0	0	0	22.31	14.62
Inner Mongolia	0	1	1	1	0	0	0	0.50	1.05
Shanxi	3	3	1	3	0	0	0	2.85	2.67
Liaoning	8	10	6	4	5	0	29	7.73	4.83
Jilin	2	2	4	1	3	0	0	2.23	2.83
Heilongjiang	2	3	2	2	5	0	0	1.77	2.51
Shanghai	0	2	2	1	0	0	0	0.60	0.29
Jiangsu	11	7	8	9	8	0	0	10.53	10.90
Zhejiang	2	1	0	1	0	0	0	1.53	0.74
Fujian	0	4	3	1	0	0	0	0.81	0.66
Jiangxi	0	1	1	1	0	0	0	0.46	2.30
Auhui	1	1	1	1	0	0	0	1.00	3.79
Shandong	25	23	18	9	7	0	0	23.35	17.31
Guangdong	0	1	2	2	4	100	53	0.75	0.19
Sichuan	1	2	0	0	3	0	0	1.07	4.70
Chongching	0	0	0	0	0	0	0	0.29	0.12
Hunan	1	2	0	0	0	0	0	1.10	2.40
Hubei	2	3	3	5	3	0	0	2.25	7.25
Henan	11	12	19	19	7	0	0	11.85	12.02
Guangxi	0	1	0	1	0	0	0	0.24	1.00
Hainan	0	0	0	2	0	0	0	0.08	0.03
Guizhou	0	0	0	1	0	0	0	0.07	0.58
Shaanxi	1	1	0	0	0	0	0	1.13	2.15
Gansu	0	0	0	0	0	0	0	0.14	1.56
Qinghai	0	0	0	0	4	0	0	0.04	0.08
Ningxia	1	1	0	0	0	0	0	0.58	0.32
Xinjiang	0	1	3	3	0	0	0	0.72	0.50
Yunnan	0	1	1	1	0	0	0	0.23	1.02
Total	100	100	100	100	100	100	100	100.00	100.00

Source: Table 6.

Appendix 12. Percent of commercial laying hen inventory, those on farms with 1,000 hens or more, by size of operation in China, 1996

Province	Laying hens per farm							Total inventory 1,000 hens or more
	1,000- 9,999	10,000 49,999	50,000 99,999	100,000 199,999	200,000 299,999	300,000- 499,999	500,000 and more	
Beijing	0	29	24	25	19	0	3	100
Tianjin	62	25	6	5	2	0	0	100
Hebei	91	8	1	1	0	0	0	100
Inner Mongolia	70	21	5	3	0	0	0	100
Shanxi	83	13	2	2	0	0	0	100
Liaoning	76	17	3	1	1	0	2	100
Jilin	75	16	6	1	1	0	0	100
Heilongjiang	68	22	4	3	3	0	0	100
Shanghai	29	56	9	6	0	0	0	100
Jiangsu	85	10	3	2	1	0	0	100
Zhejiang	93	5	1	1	0	0	0	100
Fujian	24	62	12	2	0	0	0	100
Jiangxi	65	22	9	4	0	0	0	100
Auhui	79	14	5	2	0	0	0	100
Shandong	83	14	3	1	0	0	0	100
Guangdong	15	23	11	8	4	7	31	100
Sichuan	77	20	0	0	3	0	0	100
Chongching	87	13	0	0	0	0	0	100
Hunan	79	20	1	0	0	0	0	100
Hubei	72	18	4	5	1	0	0	100
Henan	76	14	5	4	1	0	0	100
Guangxi	49	37	3	10	0	0	0	100
Hainan	24	14	0	61	0	0	0	100
Guizhou	44	17	0	39	0	0	0	100
Shaanxi	91	8	1	0	0	0	0	100
Gansu	57	43	0	0	0	0	0	100
Qinghai	12	5	0	0	84	0	0	100
Ningxia	69	31	0	0	0	0	0	100
Xinjiang	47	29	13	11	0	0	0	100
Yunnan	48	33	10	8	0	0	0	100
National	78.63	14.11	3.34	2.47	0.94	0.06	0.44	100.00

Source: Table 6.