

China's Feedgrain Demand and Supply Revisited

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Outline

1. The importance of China's rising feedgrain consumption
2. How much has been consumed in the past?
3. Discrepancies in projections of China's feedgrain demand and supply
4. Why projections differ?
5. Our own result
6. Implications for future research

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1. The importance of China's rising feedgrain consumption

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Increase in animal product consumption in China

	1981	2005	% increase
		Rural	
Meats	9.4	20.8	221
Eggs	1.3	4.7	362
Aquatic products	1.3	4.9	377
		Urban	
Meats	20.5	32.9	160
Eggs	5.2	10.4	200
Aquatic products	7.3	12.6	173

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- Increased consumption of animal products by the Chinese has so far been met by fast increasing domestic livestock production, which in turn has demanded for an ever-increasing amount of feedgrains.
- The expansion of China's livestock industries is indeed very impressive. The rapid expansion of worldwide livestock production in recent years is, to a large extent, attributable to the remarkable growth of China's livestock industries.
- During 1989-99, world annual growth rate of total livestock production was 2%. Excluding China, this rate, however, was merely 0.8%.
- Hence, the demand for feedgrain by China's fast expanding livestock industries deserves particular attention.

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2. How much has been consumed in the past?

- No clear idea
- Estimates
- Two approaches: demand approach and supply approach
- Examples and discrepancies

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Estimates of China's feedgrain consumption: Discrepancies

Year	Feedgrains consumed (demand approach)			Feedgrains consumed (supply approach)
	MOA	Aubert		
		Low	High	
1984				81.1
1985	48.7	106	118	84.6
1986	60.6	112	125	84.6
1987	73.8	114	128	93.6
1988	89	124	139	99.4
1989	105.2	127	142	103.4
1990	125.6	143	161	108.9
1991	132.6	151	161	114.8
1992	126.2	151	169	120.9
1993	-	162	182	127.4
1994	169.5	182	205	134.2
1995	143.6	202	227	
1996	225.6	225	254	

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Recent estimates of China's feedgrain consumption (1995-2003)

Year	Xian (2003), balance sheet approach	Yang (2003), estimates	Difference
1995	130		
1996	136	148	12
1997	141	149	8
1998	143	160	17
1999	146	163	17
2000	147	156	9
2001	149	156	7
2002	151	160	9
2003	153	164	10

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3. Discrepancies in projections of China's feedgrain demand and supply

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Projections of China's feedgrain demand and supply in 2000 (estimated actual in 2000: about 160mt)

Author	Projection Results (mt)			
	Year	Demand	Supply	Balance
Liu (1988)	2000	153.7	125	-28.7
CAAS (1989)	2000	190		
Garnaut and Ma (1992, p. 98)	2000	162		
	2000	196		
RGCFDS (1993, p. 22)	2000		131	
Huang and Rozelle (1996)	2000	109		
Cheng et al. (1997)	2000	160-170		
Zhang (1997)	2000	222	150	-72
RGCFMR (1998)	2000	150		
Findlay (ed.) (1998, pp. 11,	2000	239	210	-29
	2000	201	210	9
Xian (ed.) (2003, p. 9)	2000	148		

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Projections of China's Feedgrain Demand and Supply Beyond 2000

Author	Projection Results (mt)			
	Year	Demand	Supply	Balance
RGCFDS (1993, p. 22)	2020		194	
Huang and Rozelle (1996)	2010	158		
	2020	232		
Findlay (ed.) (1998, pp. 11, 49)	2010	346	282	-64
	2020	466	378	-88
	2010	311	282	-29
	2020	443	378	-65
Xian (ed.) (2003, p. 9)	2005	158		

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- Observations emerging from examining existing projections:
 - Some available studies seem to lack rigour in their research methodology.
 - Most projections were carried out as part of China's total grain demand and supply.
 - There are discrepancies in both demand and supply projections.
 - Discrepancies in demand are much greater than those in supply.
 - Researchers tend to overestimate China's feedgrains demand but underestimate supply.
 - Some projections have tended to deviate greatly from the reality.

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4. Why projections differ?

- Understanding why previous projections have created discrepancies can help make better future projections.

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On the demand side

- Differences in feed-meat conversion ratios.
- Lack of information on different kinds of animal raising practices - different conversion ratios and feed composition.
- Different income elasticities, holding income growth constant, will lead to dramatically different estimates of demand for animal products.

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On the supply side:

- Uncertainty in total grain supply
- Difficulty in anticipating the advent, adoption, and effect of new technologies
- Unforeseeable government policy changes

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Data and conceptual problems:

- Data availability - feed-meat conversion ratios, feed composition
- Data coverage - criteria for being a specialised household
- Data reliability - not a new problem
- Conceptual problems - feed-meat conversion ratio, live weight or carcass weight?

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5. Our own result

A project for GRDC.

A systems approach.

Our results.

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- China's feedgrain demand and import requirements are likely much smaller than previously projected for 2010.

	Previous Studies (m t)	GRDC Report (m t)
Feedgrain supply	280	203
Feedgrain demand	310 (345)	210
Import requirements	≥ 30	< 10

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6. Implications for future research

6.1 Taking other unknowns into consideration

- Government policy choices
- Income growth and changes in income elasticities
- Technological choices
- Water availability and quality
- Evolution from traditional animal raising to modern methods
- China's access to international markets
- Regional differences
- Changes in tastes and preferences

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6.2 Areas that deserve particular attention

1) Regional focus

- Differences between the three kinds of feeding practices and between regions.
- Conversion ratios between different feeding practices and between regions.
- Proportion of different feeding practices at the regional level and its change over time.
- Income elasticities of demand for various kinds of animal products at the regional level and for rural and urban consumers.
- Consumer preferences between rural and urban areas and between regions.

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- 2) Away from home consumption
- 3) Feedgrain use in the farming of aquatic products
- 4) Rural demand for animal products