

2013

China's Changing Diet: A Mixed Blessing?

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CORNHUSKER ECONOMICS

University of Nebraska–Lincoln Extension

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Market Report	Yr Ago	4 Wks Ago	10/11/13
<u>Livestock and Products,</u>			
<u>Weekly Average</u>			
Nebraska Slaughter Steers, 35-65% Choice, Live Weight.....	\$124.99	\$123.50	+
Nebraska Feeder Steers, Med. & Large Frame, 550-600 lb.....	163.67	181.96	+
Nebraska Feeder Steers, Med. & Large Frame 750-800 lb.....	151.17	163.54	+
Choice Boxed Beef, 600-750 lb. Carcass.....	191.15	193.71	+
Western Corn Belt Base Hog Price Carcass, Negotiated.....	81.52	94.95	+
Pork Carcass Cutout, 185 lb. Carcass, 51-52% Lean.....	86.27	96.05	+
Slaughter Lambs, Ch. & Pr., Heavy, Wooled, South Dakota, Direct.....	89.00	120.00	+
National Carcass Lamb Cutout, FOB.....	309.56	273.97	+
<u>Crops,</u>			
<u>Daily Spot Prices</u>			
Wheat, No. 1, H.W. Imperial, bu.....	8.08	6.61	+
Corn, No. 2, Yellow Nebraska City, bu.....	7.48	4.94	+
Soybeans, No. 1, Yellow Nebraska City, bu.....	14.38	14.47	+
Grain Sorghum, No. 2, Yellow Dorchester, cwt.....	12.63	7.48	+
Oats, No. 2, Heavy Minneapolis, MN, bu.....	4.07	3.37	+
<u>Feed</u>			
Alfalfa, Large Square Bales, Good to Premium, RFV 160-185 Northeast Nebraska, ton.....	237.50	+	+
Alfalfa, Large Rounds, Good Platte Valley, ton.....	215.00	160.00	+
Grass Hay, Large Rounds, Good Nebraska, ton.....	190.00	117.50	+
Dried Distillers Grains, 10% Moisture, Nebraska Average.....	272.50	212.50	+
Wet Distillers Grains, 65-70% Moisture, Nebraska Average.....	104.00	79.50	+
+ No Market - USDA website down due to Government Shutdown			

The Chinese economy has experienced unprecedented growth in the past four decades. The gross domestic product (GDP) growth rate has averaged ten percent since 1978 when Deng Xiaoping instituted economic reforms, making China's economy more market-oriented (The World Bank Group, 2013). In 2011, China had the world's second largest economy after the United States. According to a recent report by the Boston Consulting Group (BCG) (Silverstein, et al., 2013), the two countries accounted for 24 percent and 10 percent of global GDP, respectively. However, while U.S. GDP grew by 1.5 percent in 2011, China's grew by 9.1 percent. In 2022, the share of China in global GDP is expected to increase to 14 percent, with a GDP growth of eight percent. The U.S. share is expected to decline to 21 percent, with a GDP growth of 2.8 percent. The BCG estimates that a Chinese born in 2009 will consume 38 times more over his or her lifetime than one born in 1960.

Concomitant with China's phenomenal economic growth is the livestock revolution, a demand-driven increase in meat consumption worldwide. Until the mid-nineties, the amount of meat consumed in developing countries grew three times as fast as compared to developed countries, lending support to Bennett's Law (Pinstrip-Andersen, Pandya-Lorch and Rosegrant, 1999). Bennett's Law states that if a country is developing, household income rises, and therefore consumption of starchy staples decreases. Conversely, there is an increase in the consumption of animal-products such as dairy or meat.

The Chinese dietary transition shown in Figure 1 (on next page) conforms to Bennett's Law. As shown in the figure, in the five years following Xiaoping's liberalization of the economy, the animal-based proportion of China's diet hovered around eight percent of the total diet. There was no significant spike during this time period. Since

then, the proportion consistently increased, reaching an average of 22 percent during the 2004-2008 period. This is comparable to the 27.5 percent of animal-based consumption in the U.S. diet. Pork is the leading meat in China, followed by chicken, with beef a distant third. In addition to the increase in the proportion of animal-based food, the total amount of food supplied per capita also increased.

On a total basis, Chinese pork consumption (Figure 2, on next page) has progressively outpaced U.S. total pork consumption since the mid-seventies, and was six times higher in 2012. Chinese chicken consumption (Figure 4, on next page) has increased at about the same rate as it did in the U.S., and now the respective consumption levels in the two countries are at about the same level. Beef consumption has also increased, but at a much slower rate. In 2012, total beef consumption in China was about half the U.S. consumption.

On a per person basis, China surpassed the U.S. in pork consumption in 1997 (Figure 3, on next page). In 2012, the average Chinese consumed 27 more pounds of pork than the average American. China still lags behind the U.S. considerably in chicken and beef (Figures 5 and 7, respectively, on next page). According to the BCG, pork and chicken consumption in China is expected to increase in the future at an annual rate of four and seven percent, respectively.

The mixed blessing of the Chinese diet comes from the boon to U.S. farmers from the huge Chinese demand for grain to feed its livestock, which means higher food prices for the average American household and increased stress on natural resources, especially water. Currently, 60 percent of the world's soybean exports are destined for China to feed its pigs and chickens. About 35 percent of the exports originate from the U.S. and constitute 25 percent of U.S. soybean production. By providing strong price support for the U.S. soybean market, Chinese soybean imports have, and will, continue to be important to the profitability of soybean production.

Prospects for increased corn imports by China to feed its livestock are also high, despite the fact that China is the second largest producer of corn in the world after the U.S.

There are several reasons for this (Collins and Erickson, 2013). First, although China harvests as much corn acreage as the U.S., its corn yield per acre is half that of the U.S. and has been stagnant over the past 20 years. **S e c o n d**, economic-growth driven road and railroad projects have diverted land that would have produced enough corn to replace most of the corn imports. Third, although China can substitute a substantial amount of corn imports for direct meat imports (207 lbs.

of corn for 100 lbs. of chicken and 448 lbs. of corn for 100 lbs. of pork), China is more likely to continue to import corn in order to promote its own domestic meat industry, enhance food security and generate domestic employment.

Combined with competing demands for feed grains (think India's demand for food), higher meat consumption in China is expected to lead to higher food prices here at home. The strain is expected to be felt by U.S. households, particularly low earners. The BCG estimates that for families earning \$40,000 or less per year, a ten percent increase in food prices will raise their food bill from \$3,000 to \$3,300. The additional \$300 is equivalent to between a half to a full week's paycheck.

Producing more soybeans and corn in the U.S. to satisfy domestic and international demand, particularly China's, will require more water, adding more stress to this natural resource, especially in the face of climate change. The average water requirement in the U.S. for producing one kilogram (Kg) of soybeans (1 bushel = 27.22 Kg) is 1,662 liters of water (1 liter = 0.26 U.S. gallon), and the average requirement for producing one Kg of corn is 762 liters. This, according to the BCG, translates to a 55 percent increase in the annual growth of water consumption for corn production and a 17 percent increase for soybean production between 2007 and 2012. The value of the increased water use to produce the two crops during that period is estimated at between \$50 billion and \$100 billion. Moreover, feeding a growing number of pigs and chickens and raising them to slaughter in China will require even more water, as meat production is more water intensive than crop production. The BCG reports that 35 percent of India's river water originates from territories under China's control. Along with the rapid reduction in

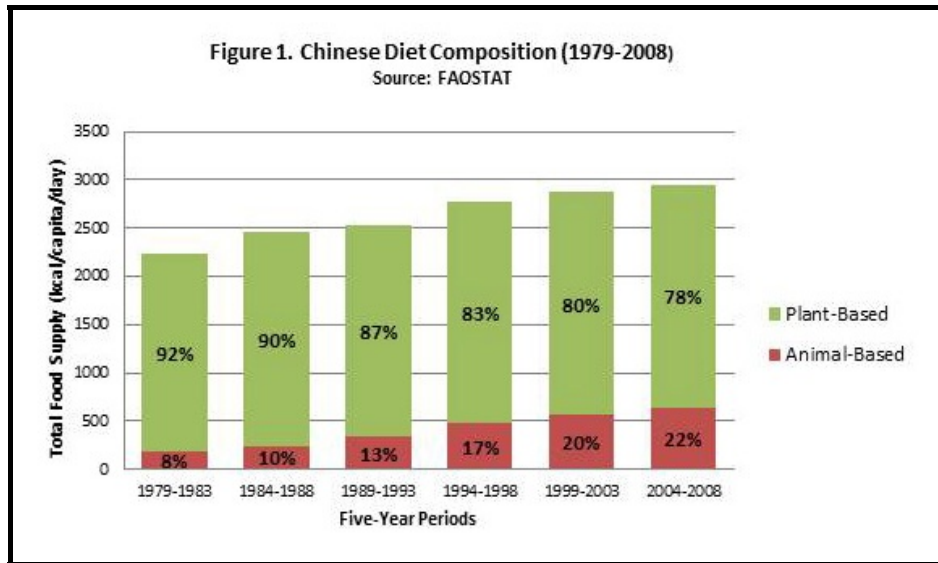
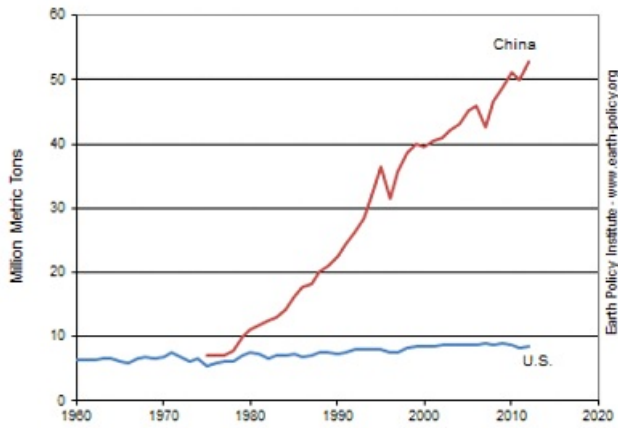
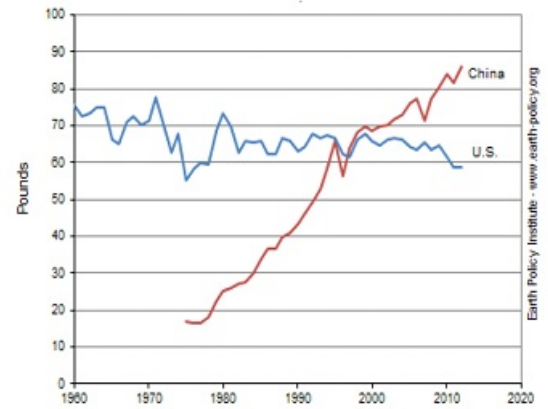


Figure 2. Pork Consumption in China and the U.S. (1960-2012)



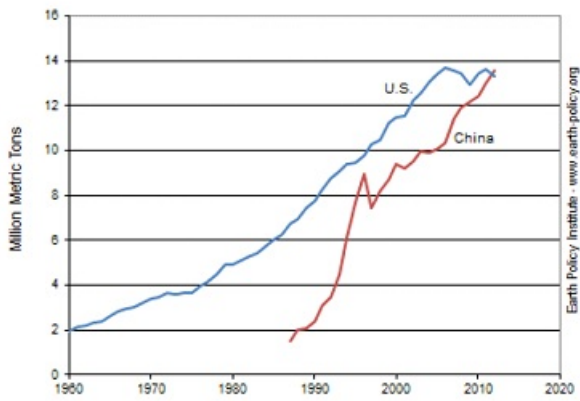
Source: Larsen, 2013

Figure 3. Pork Consumption per person in China and the U.S. (1960-2012)



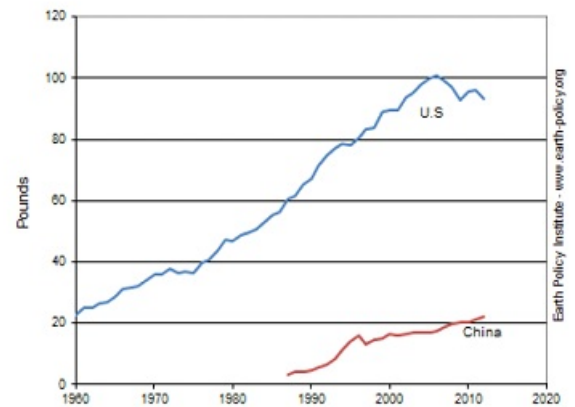
Source: Larsen, 2013

Figure 4. Chicken Consumption in China and the U.S. (1960-2012)



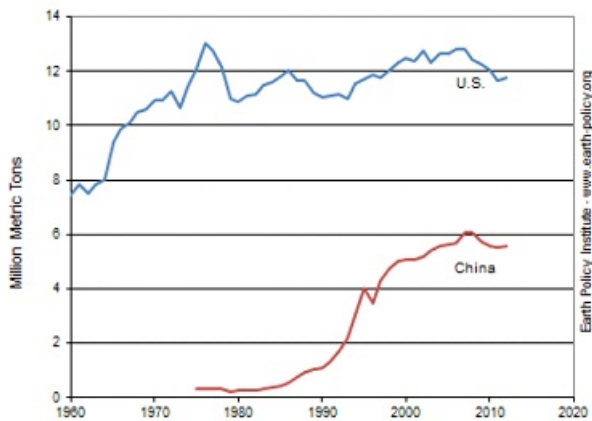
Source: Larsen, 2013

Figure 5. Chicken Consumption per person in China and the U.S. (1960-2012)



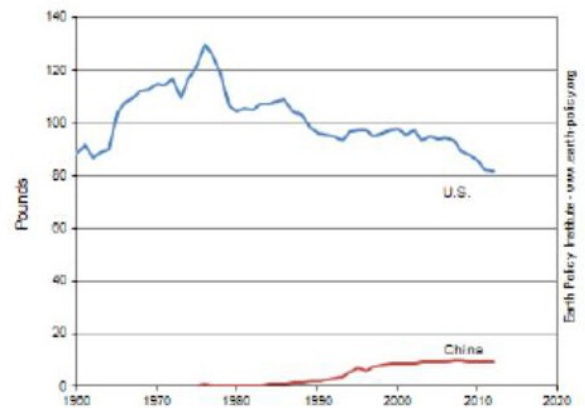
Source: Larsen, 2013

Figure 6. Beef Consumption in China and the U.S. (1960-2012)



Source: Larsen, 2013

Figure 7. Beef Consumption per Capita in China and the U.S. (1960-2012)



Source: Larsen, 2013

the Himalayan glaciers due to climate change (Erickson et al., 2009; Wirsing, 2012), it is not difficult to imagine some of the consequences of diminished water flow to India, not the least of which is water war.

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