

Prospects for US-China Trade in Meat Products and Associated Investment Opportunities

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About the Author

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A native of the Republic of Ireland, Hayes obtained his degree in agriculture science from the University College in Dublin in 1981 and his Ph.D. from the University of California, Berkeley, in 1986 with a major in international trade. Hayes joined the Department of Economics at Iowa State University in March 1986. He has distinguished himself with many awards at the college and university levels for his work as a teacher and researcher. In 2006 he received a "Publication of Enduring Quality" award from the American Agricultural Economics Association (AAEA). AAEA named him a Fellow in 2007, its highest recognition for distinction in the discipline. Besides his analysis of US farm policy and international agricultural trade, his other research interests include food safety, livestock modeling, demand analysis, and commodity markets.

Executive Summary

The rapid growth rate in per capita disposable income in China, coupled with a continued migration of hundreds of millions of new consumers to urban areas, has created challenges for the Chinese crop and livestock sectors. Faced with an increase in demand for animal protein, a scarcity of land and a reduction in the agricultural labor force, China has responded by importing almost all of the soybeans needed to feed its domestic livestock industries. More recently, China has also become a reliable importer of corn and distillers dry grains.

Once a country becomes an importer of animal feed, domestic prices rise to import parity and the domestic livestock production loses its competitive advantage. When livestock producers pay import parity prices for feed, production costs rise to a level that is greater than the delivered price of imported meat. This simply reflects the proportionally higher cost of transporting bulky raw materials (corn and soybeans) relative to the cost of transporting the final product (boneless meat). But to date, China has managed to postpone the need to import significant quantities of pork, beef, and poultry by deploying a combination of technical barriers, import duties, and subsidies to domestic producers that have (artificially) kept domestic costs competitive. These barriers have added

to the cost of delivered meat relative to domestic production costs, and this has allowed the domestic industry to compete against imported livestock products.

These barriers come at a cost. My own research presented below shows that once one factors in disease costs and properly accounts for the opportunity costs of fixed factors, such as land and capital, farm level production costs for pork are almost twice as high in China as in the United States. This means that the companies that buy domestic hogs in China are paying far more than they need to. Obviously these costs must then be passed along to the consumer.

Eastern China has the world's greatest concentration of pigs, poultry, and people. This situation is an ideal environment for the development and mutation of new animal diseases. Animal density has also caused environmental pollution. And while the Chinese government has attempted to deal with this situation by encouraging the replacement of backyard animal feeding with confinements, the shift from using household and restaurant waste as animal feed to a diet based only on commercial feed has exacerbated the feed scarcity problem while not yet reducing the disease problem. As a result of these systemic disease problems, China and the countries surrounding it have

experienced a reduction in the productivity of the sow herd. The short-term answer to this situation has been to add more breeding stock, but this may only make the disease problem even worse.

Bluntly put, this situation is unsustainable for the Chinese government, the country's agricultural sector, and especially Chinese consumers who are demanding more and competitively priced animal protein in their diet. Indeed, as China's animal protein requirements continue to rise, the country will have to rely more heavily on global markets to assure supplies, not just import feed.

A logical solution to the livestock issue is to import more meat products. This was the outcome in South Korea and Japan, which now import 30 to 50 percent of their pork needs. Yet the Chinese government has, to date, opposed this move because it does not wish to become reliant on other countries. The government equates "food security" with "self-sufficiency" and fears that the enormous imports that might ensue would be responsible for increasing world prices for key animal products.

But savvy investors are in a position to capitalize on the Chinese government's inevitable recognition of the need for policy change. This report identifies and describes three business opportunities that could emerge as this situation unfolds.

Opportunity One: Long Term Production Contracts

First, the development of a livestock feeding industry located in parts of the world where production costs are low and animal productivity is high creates opportunities for Chinese investors to establish direct links between the supply chain and Chinese consumers. Under this model, independent livestock producers, for example in areas such as the American Midwest, would use capital from Chinese companies to build new greenfield facilities, knowing that they have a long-term contract to deliver the animals to a US packing plant specialized in the Chinese market.

Chinese companies would provide the source of capital for these new livestock production and processing facilities and own a share of the plant or own the entire plant. The nature of the contract would be such that the live animal or carcass is owned by the Chinese company. This development would provide the Chinese consumer with a sense of food security along the supply chain, but also reduce world price volatility and result in much lower meat cost for Chinese consumers.

Benefits to the US would include employment generated by producing and processing of animals, capital financing for younger producers, a guaranteed market with a rapidly expanding base of consumers of animal protein, and a source of animal manure

for use as a crop fertilizer. Under somewhat similar circumstances, Japanese firms made direct investments in grain transportation and livestock production facilities, including one of the largest Iowa packing plants (Perry). Japanese firms also own Continental Grain and Barge. This investment in infrastructure, which Japan depended upon to provide some supply, allowed Japan to import foods without the sense of dependence that comes from having no direct stake in production and supply.

Opportunity Two: Animal Parts Arbitrage

A second investment model would aim to capitalize on taste differences in the United States and China. These are such that vast quantities of animal parts could be profitably traded *even* if both countries were self-sufficient in carcass meat. For example, anecdotal but systematic observation from my visits to Chinese supermarkets suggests that Chinese customers are willing to pay more for chicken feet than chicken breast meat. This arbitrage opportunity is not new and *has* resulted in some trade in these products. But trade has yet to reach its enormous potential because of trade barriers imposed by Beijing and because US packing plants have been unwilling to develop or

customize products for an uncertain customer.

Again, an investment-based solution exists because US and Chinese counterparties could develop legally binding long-term purchase contracts that mitigate the concerns of US packers about potentially on-again-off-again Chinese demand.

Opportunity Three: Labor Intensive Exports from China

A third creative investment model would leverage China's intention, heavily emphasized in recent speeches and statements by the new premier, Li Keqiang, to allow market forces to play a larger role in allocating resources. If the Chinese government moves decisively in this direction, market forces will free up tens of millions of people and crop acres for value added agricultural production—for example, by reducing the number of corn acres, which would in turn free up areas of arable land. Faced with similar pressures, South Korea and Japan completely eliminated the domestic production of animal feed. Should China follow their example, the containers that bring US meat carcasses to Chinese ports would, under this scenario, someday return filled with fruits, flowers, and other labor intensive agricultural products.

Introduction

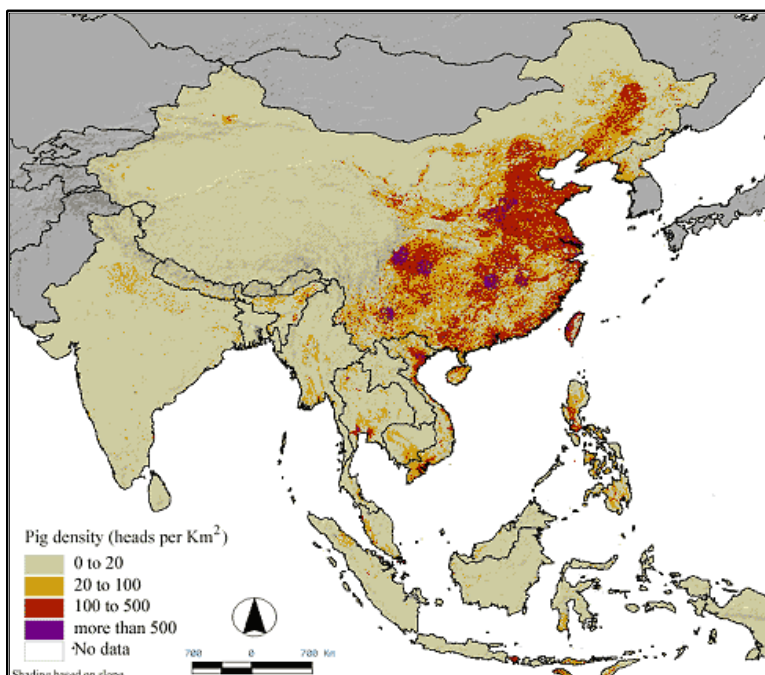
Recent media stories about dead pigs floating in the Huangpu River and the emergence of a new H7N9 avian influenza virus have at least one thing in common. Both events were related to the unusual density of livestock production in eastern China. The hogs found in the river were from Jiaying county, Zhejiang Province, and many were infected with circovirus. Local officials blamed the large numbers of pigs kept in close proximity for the deaths.¹ Meanwhile, the H7N9 virus, as well as the outbreak of SARS virus in 2003 and the H5N1 bird flu of 2005, were caused by mutations that allowed the virus to spread from species to species and from animal to human. The likelihood of such mutations is directly related to the number of contacts among birds, pigs, and humans and there is nowhere else on earth with as many human to animal and bird to pig contacts as eastern China.

This is bad news for the Chinese consumer, who increasingly has a preference for animal protein, as well as the disposable income to purchase it. Chinese consumers have a traditional

preference for fresh meat. As a result, pigs and birds are often shipped live to small local wet markets where they are slaughtered on the day of sale. But this method of slaughter obviously raises the number of contacts between animals and humans. A significant portion—about 40 percent—of China's livestock production is raised in backyard units where, again, such contacts are very common.

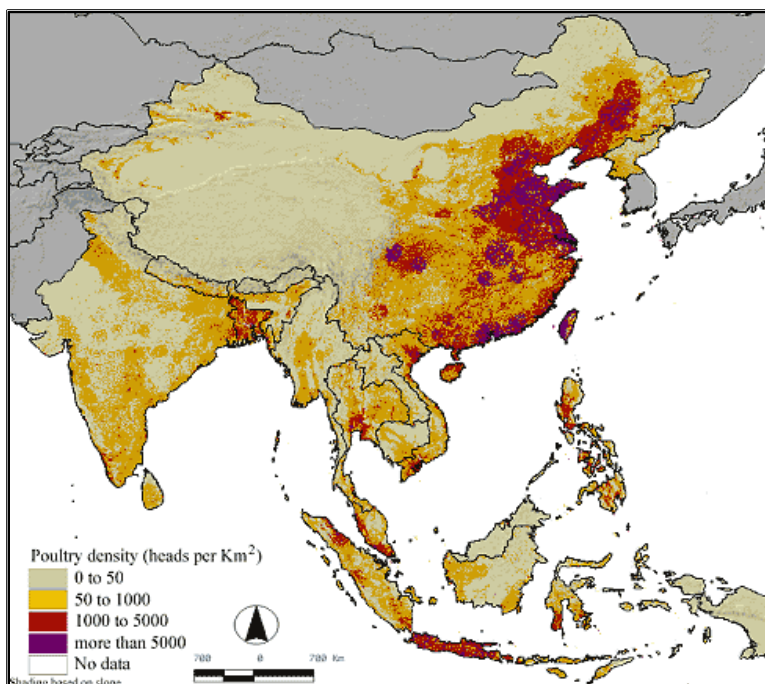
The Chinese government has been trying to replace the backyard farm to wet market system with modern confinement buildings and a cold chain distribution system. And the good news is that the government *has* successfully reduced the proportion of total production from the older system by at least half.

China produces more than 52.3 million tons of pork per year, as well as 13.7 million tons of poultry.² Almost all of this production takes place in the eastern third of the country—the same location where human density is greatest. Maps 1, 2, and 3 below illustrate these factors.



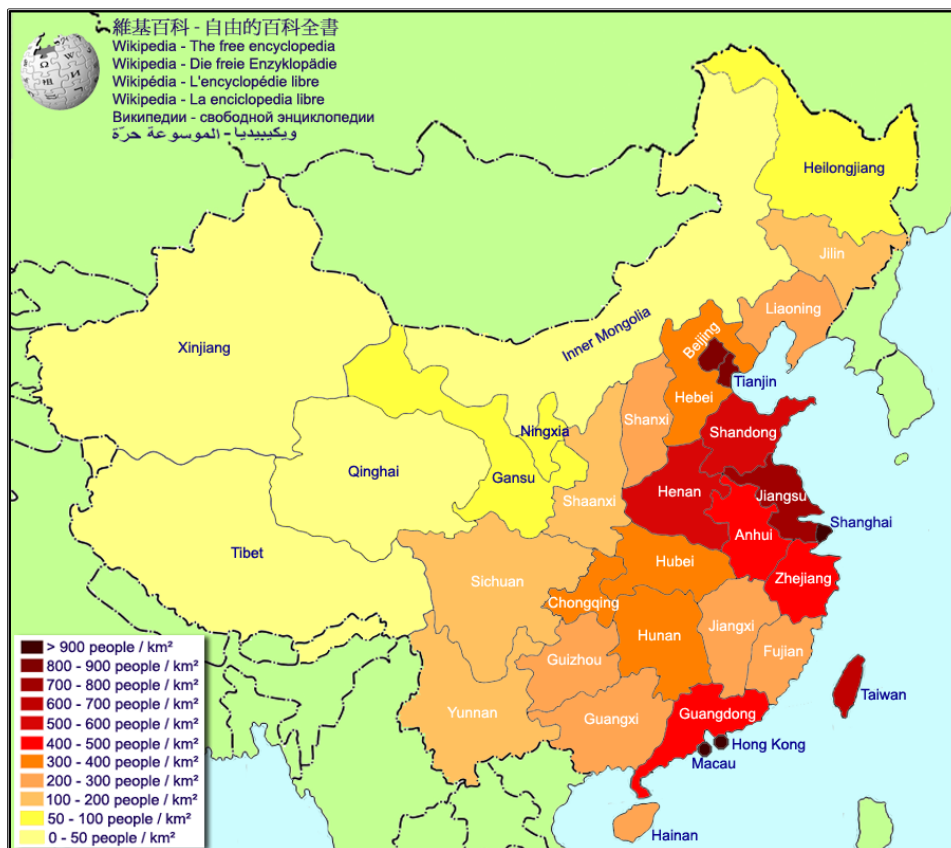
Map 1. Density of Pig Population in China

http://pigtrop.cirad.fr/subjects/environment_and_natural_resources_protection/geographical_trends_in_livestock_densities_and_nutrient_balances



Map 2. Density of Poultry Population in China

http://pigtrop.cirad.fr/subjects/environment_and_natural_resources_protection/geographical_trends_in_livestock_densities_and_nutrient_balances



Map 3. Density of Human Population in China

[http://commons.wikimedia.org/wiki/File%3APopulation_density_of_China_by_firstlevel_administrative_regions\(English\).png](http://commons.wikimedia.org/wiki/File%3APopulation_density_of_China_by_firstlevel_administrative_regions(English).png)

Still, the shift from backyard production also requires a massive program to construct new confinement buildings, a process that, in turn, requires land, capital, and skilled labor. So for the Chinese government, even with the best of intentions and the most skillful execution of the central government's goal, the issue has emerged as to whether this is a wise investment in the first place.

It is clear, for example, that locating these new facilities in China is

preferable from the perspective of self-sufficiency. But such a sense of "food security" is not entirely valid, in any case, so long as the animals themselves rely on *imported* feed. Viewed in this light, the somewhat superficial sense of food security provided by the shift from backyard production must be compared to the costs in terms of both food prices and environmental and social sustainability. These costs are, in fact, considerable.

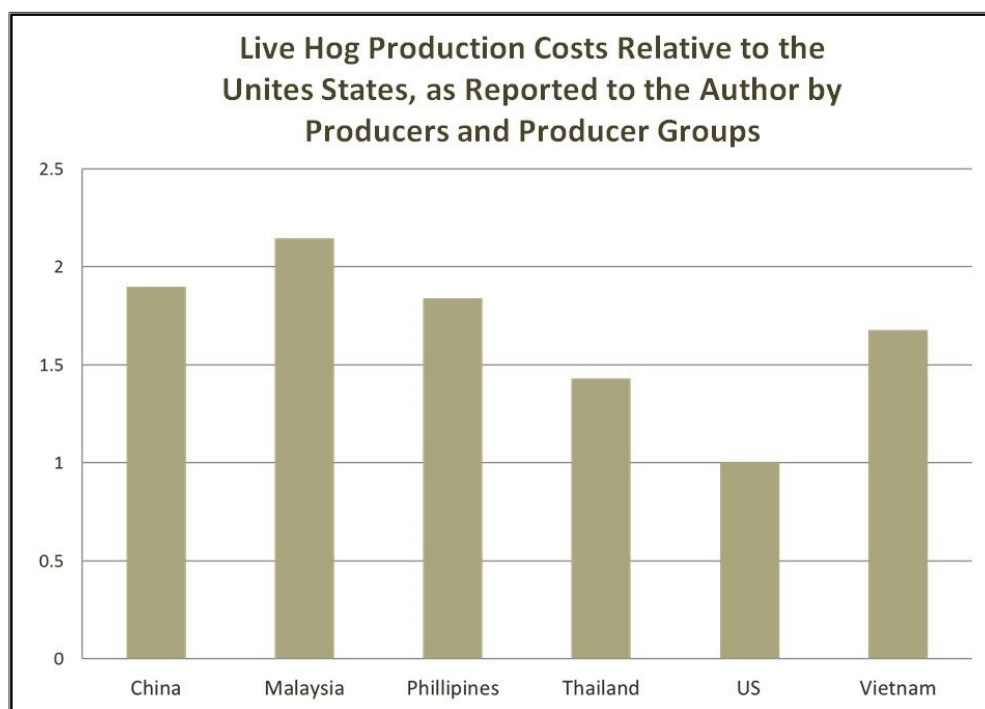
Economic and Environmental Consequences of Sustaining China's Current Self-Sufficiency Policies

The reason these costs are so high stems, in large part, from collateral problems generated by the commitment to self-sufficiency. Can China continue to add more animals to meet the increasing needs of its newly prosperous people and to compensate for the reduction in backyard production? That is unlikely.

For one, the shift to a modern confinement system will actually increase the volume of commercial feed grain that China needs. This is because, while the backyard system allowed the farmer to supplement commercial feed with household and restaurant waste, such a practice is not feasible in commercial

units. And this increase in demand for feed grains will tax an already overburdened feed system and likely result in large-scale imports of feed.

The economics of grain markets are such that once feed prices reach import parity, production costs rise to a level that is far higher than the cost of importing the finished product from grain surplus regions. My own estimate, based on several trips to China and interviews with both large and small pork companies, is that Chinese carcass production costs measured using US accounting practices are now almost twice the delivered price of US pork.



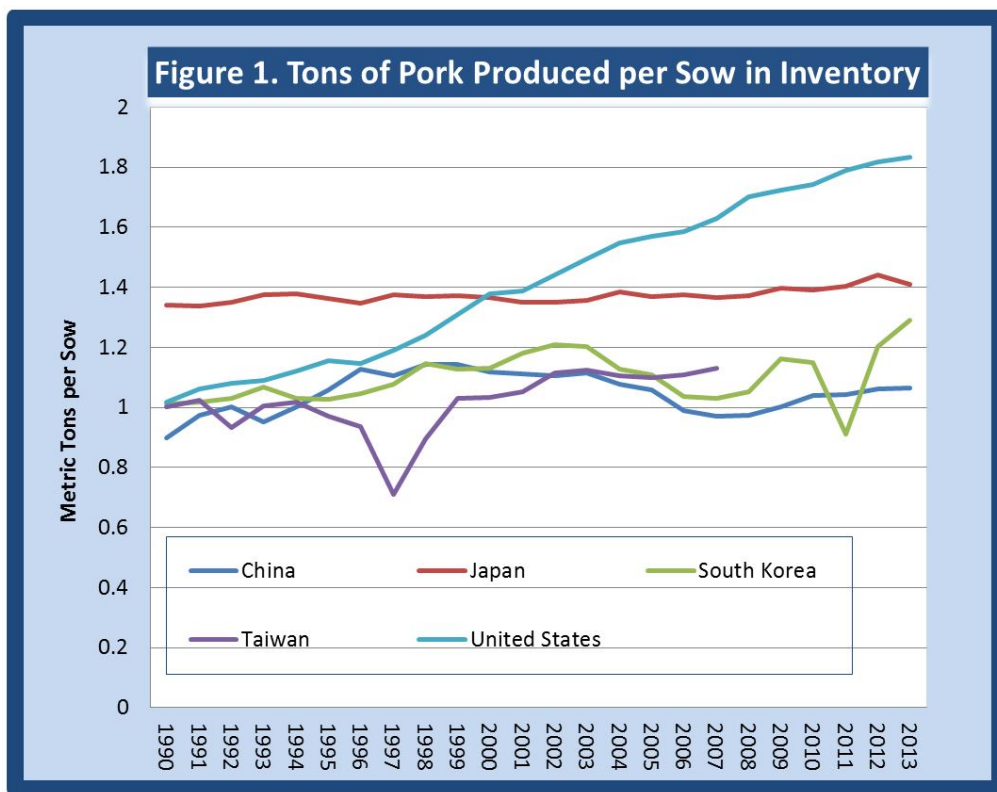
Data from author research

At the same time, the movement of livestock production indoors results in many animals in close contact. It results as well in the creation of a concentrated source of disease vectors, some of which can be carried by the wind.

The virus responsible for Porcine Reproductive and Respiratory Symptom (PRRS) and for mycoplasma hyopneumoniae can both be transmitted for almost five kilometers.³ In response to this issue, pork producers in the US Midwest have moved the breeding herd to isolated areas, out of state and away from production. With the same rationale in mind, pork producers in the Netherlands and Denmark have moved their finishing barns to other countries. This solution

does not seem feasible in China given the enormous volume of production, as well as the lack of infrastructure in the western half of the country. The data in Figure 1 shows how important this fundamental issue of disease has been for the country's pork production.

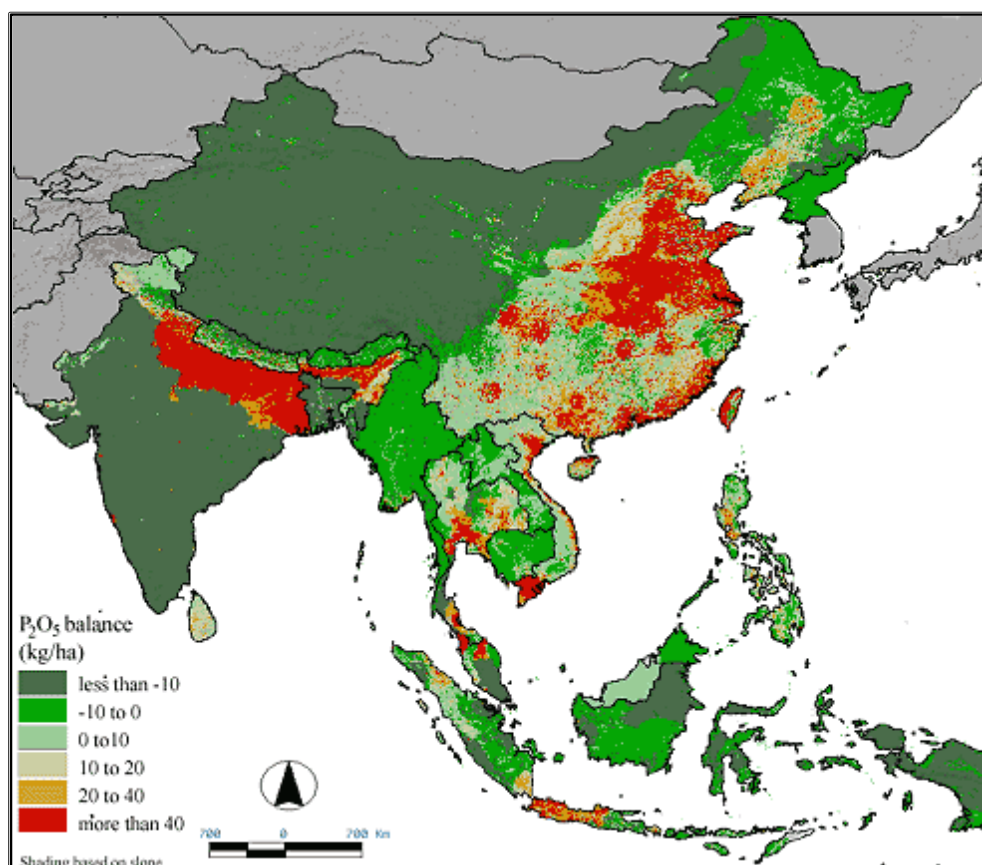
In 1996, for example, the United States and China each produced almost 1.2 tons of pork for each sow in inventory. By 2012, the United States had increased its production per sow to 1.8 tons. In China, by contrast, the output per sow had actually fallen by about 10 percent. Other countries in the Asia-Pacific region have also experienced stagnation in sow productivity.



To date, the response of the Chinese government to this decline in productivity has been to add sows to compensate for disease losses. But to the extent that the decline itself is due to stocking density, this solution may exacerbate the problem.

Finally, the presence of almost half of the world's pigs and twenty percent of the world's poultry on a relatively small

land base in China has created problems with odor, water contamination, and over-application of fertilizer. Map 4 below shows that the livestock intensive areas of China are well beyond the maximum phosphorus level. At these concentrations, phosphorus can severely damage the quality of nearby streams and lakes.



Map 4. Phosphorous Balance in China

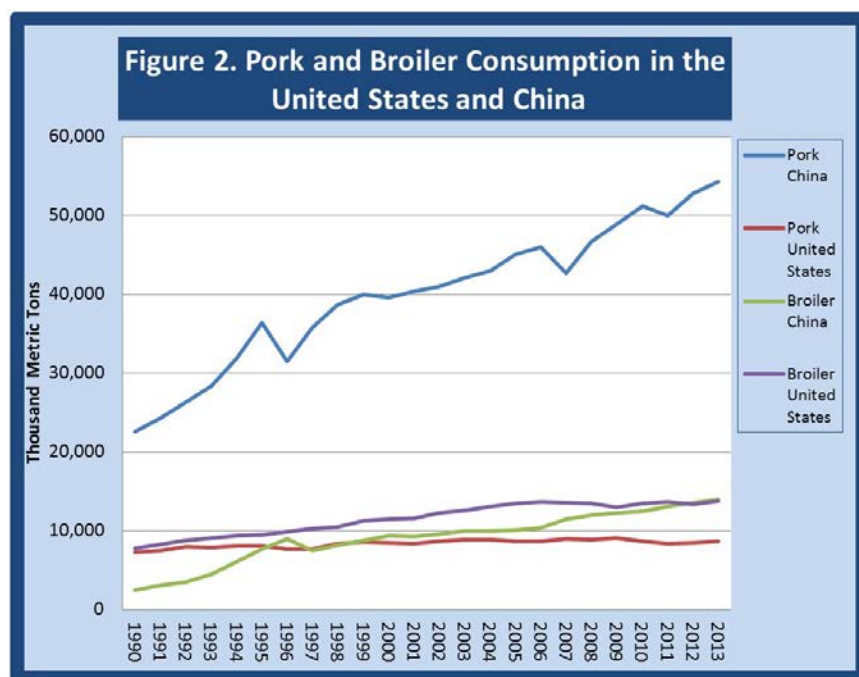
Opportunities for Mutually Beneficial Trade and Investment Between the United States and China

Based on this analysis, it is only a matter of time before underlying tensions associated with high food costs, pollution, or the continued development of new strains of human and animal diseases create new incentives for the Chinese government to reconsider its reluctance to rely on global markets and its traditional commitment to current policies of food self-sufficiency. And when it comes, this transition will create very considerable—and unprecedented—trade and investment opportunities.

To see why, it is useful to begin with a comparison of US and Chinese production volumes and consumption

trends. These show how immense the implications of this change of approach will be.

Figure 2 shows consumption trends for pork and broiler meat in the United States and China. Chinese pork consumption has increased by 140 percent between 1990 and 2013, and Chinese broiler consumption has increased by almost 500 percent between 1990 and 2013. China has met almost all of this increase in consumption with domestic production, but, as mentioned above, this self-sufficiency scenario does not appear to be sustainable.



With the continued decline in backyard production and a continued increase in consumer demand for meat, the ongoing changes in China’s livestock sector will create significant business opportunities, including for mutually beneficial Chinese direct investment in the United States.

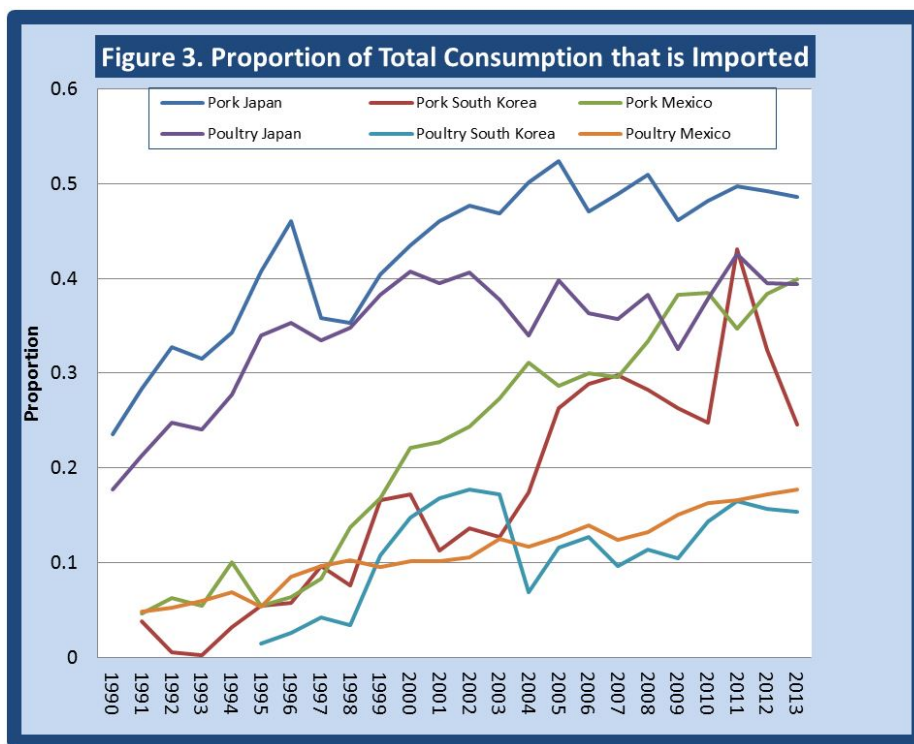
Three of these prospective trade and investment models are described below.

Opportunity One: Long Term Production Contracts

Figure 3 shows the proportion of total consumption imported by other similarly situated land scarce countries. The average proportion of pork and poultry imported by three countries—Japan, Mexico, and South Korea—in

1990 was 12 percent, and this rose to 30 percent by 2012. If China follows a similar path, it will need to import several *million* tons of meat. To put that staggering figure in comparative perspective, if China imported 18 million tons of pork (30 percent of 60 million tons), this would be a volume of imports twice as large as current US production.

The addition of an 18 million ton increase in import demand by China on a relatively thin world market would cause wild gyrations in world prices. For example, total pork exports from all countries in 2012 equaled only 7,245 million tons.⁴ China is simply too large to use the world market as a source of residual supply. And while meat producers in exporting countries would welcome large spot purchases, they will



not be willing to expand production in response to the real need of the Chinese market unless they have some assurance that the new demand is stable and long lived.

So long as this situation persists, China will be unwilling to rely on the world market because of a well-justified fear of driving up prices. For their part, livestock producers in exporting countries will be unwilling to produce the additional quantities that are

THE SHUANGHUI SOLUTION

The announcement in May 2013 by China-based Shuanghui Group of its intention to purchase Smithfield offers one solution to the demand problem at the heart of Opportunity One. If that takeover successfully moves through the US review process, Shuanghui will increase its US pig production from zero to almost 16 million animals a year. Meat from these animals can be sold on the US domestic market or in China, depending on market prices and policy. Shuanghui will also have a management team in place that can ramp up these production contracts as needed.

But not every Chinese producer or stakeholder in the pork business will simply acquire a US company. To these prospective investors, Smithfield's 1990s experience provides other lessons.

needed because they will view fixed investments in livestock construction to meet this new demand as too risky. What the exporters need is some form of guarantee that China will buy the additional product. And what China, for its part, needs is a guarantee that the product will be available at a reasonable price and in reliable quantities.

This situation is complicated by domestic politics in both China and the United States. If China begins to rely on imported meat, consumers will be concerned about an embargo by suppliers. If China becomes too aggressive in buying farm buildings and packing plants, it would (as we have seen in some of the political hubbub around the Shuanghui acquisition of Smithfield announced in May 2013) create controversy among US producers and some elements of the US political elite and general public.

Smithfield foods faced a similar problem in the mid-1990s but the solution it found at the time could serve as a template for some in China.

In the 1990s, Smithfield realized that pork production around its plants in North Carolina was reaching an economic and environmental maximum. The company was also experiencing systemic disease issues due to the concentration of buildings in a narrow area. Since Smithfield was importing much of the feed, production costs in North Carolina were well above those in grain surplus areas.

Had Smithfield solved its production problems by building new hog production facilities in Iowa and Nebraska, local farmers would have viewed the move as a competitive intrusion and opposed it.

Instead, Smithfield, through one of its subsidiaries, Murphy Brown, sought out younger and undercapitalized farmers who were willing to take ownership of the new hog production facilities. Smithfield arranged construction financing and the local producer agreed to take ownership and pay the loan off over a ten year period. Smithfield provided the local producer with feed and other inputs and retained ownership of the pigs. It also provided sufficient payments for the local producer to pay off the ten-year loan and retain a small annual surplus during the initial contract period.

Under the Smithfield contract system, the local producer received the benefit of the manure and knew that it could walk away from the contract once it received mortgage-free ownership at the end of the ten years. The local producer had the advantages of hog production but without the market risk that other producers faced. Local politicians saw local hog producers constructing new state of the art buildings with excellent manure treatment facilities, and they saw local producers spreading the manure.

Smithfield found a way to source pork at a competitive cost and at a known price

while retaining control over feed and genetics. This system was not without controversy, but it succeeded for both parties. Other large pork producers copied the method, and, as a result, Iowa's annual fed pig production increased from 23 million pigs per year in 2000 to 33 million pigs in 2012.

Nebraska and Kansas did not fully participate in the move to contract farming because Kansas has slightly higher grain prices than Iowa, and Nebraska had a state law that prohibited this kind of arrangement. But the Nebraska law was declared unconstitutional and Kansas has become a very pro-livestock state and has switched many acres from wheat to corn and soybean production. So the system could be expanded to these states to the benefit of all involved.

Chinese stakeholders could slot into this scenario in mutually beneficial ways by providing the construction financing, and then either arrange for feed to be delivered or pay the local producer to feed the animals. The animals would then be slaughtered for a set fee at a local packing plant or at a custom built plant financed by a Chinese company.

The Chinese company would retain ownership of the animals and could arrange to have them raised to suit Chinese tastes and regulations. For example, a significant brake on US pork exports to China has been Beijing's zero tolerance policy for meat treated with ractopamine, an additive that promotes

lean meat. But under this investment model, the Chinese company undertaking the investment could specify that the feed be free of ractopamine and also require that the meat be cut to meet the specifications of the Chinese market. Almost all of the carcass would then be shipped to China, with the loins and tenderloins being sold to Japan or into the US domestic market. The fact that the Chinese company owns the animals should help resolve anxiety about the security of the food supply for the Chinese consumer. This ownership should also help reduce the introduction of new trade barriers because the Chinese company would lose if the meat was prohibited from entering China.

On the US side, the local ownership of the buildings, and especially the American jobs created by the expansion, should help to calm concerns about foreign ownership of the animals. Given the enormous cost advantage of this system, it should be possible to provide a generous level of compensation to the local livestock producer. These contracts would allow young producers to remain involved in agriculture and reduce the outflow of Americans from rural areas at a time when jobs and growth are at the top of the US policy agenda, including in America's farm states.

Opportunity 2: Animal Parts Arbitrage

Each animal carcass breaks down into the same set of parts regardless of the animal's weight or breed. But the preferences of American and Chinese consumers for these parts are very different. Market trends and price data for different cuts make clear that US consumers have developed a strong preference for the larger, tender muscles in the middle of the animal, notably the loin, tenderloin, ribs, and belly of the pig, as well as the chicken breast. Chinese cuisine, by contrast, often utilizes smaller pieces of highly flavored parts of the animal with more texture (chewiness). This includes the shoulder, inner organs, head, tail, feet, and ear of the pig, as well as the head, wing-tip, and paw of the chicken.

The taste difference described above is sufficiently strong and embedded in food tradition and taste preference that an opportunity for trade would occur *even* if both countries produced as many animals as were needed to meet domestic demand for the entire carcass.

The opportunity for parts arbitrage is well understood and, prior to recent tariff and non-tariff barriers, such as Beijing's insistence on ractopamine free pork, had formed the basis for trade in chicken parts and pork variety meats between the United States and China.

But this trade was just a small example of the potential. China has never

imported more than 4 percent of its pork or poultry needs.⁵

US packers still send more than 50 percent of the live animal to rendering plants to be heat treated and turned into animal feed. This process adds very little value to the animal and wastes products that would, in fact, have value in China. Reasons for this lack of trade include Chinese barriers against US pork, poultry, and beef, as well as US refusal to allow funding for the inspections required to determine if Chinese cooked breast meat meets US food safety standards.

Bilateral trade volumes are also below potential because US packers value their sales staff based on the dollar value of sales. The very fact that the products most desired in China are of low value in sales terms in the United States actually reduces the incentive to find other consumer markets, such as China, for these cuts.

Another problem has been that there are longstanding traditions that act as barriers in their own right. For example, US pork packers typically allow the blood, bone, and some of the fat on the carcass to make contact with the floor. Once this happens, the meat is declared ineligible for human consumption. The lungs and hind feet are also declared ineligible, apparently because the lungs have been historically viewed as the source of infection and because the pig carcasses are hung using a gambrel

hook that pierces the hind feet. Many companies render the large intestine because it requires washing and chemical treatment to make it eligible for human consumption.

But an example of the kind of opportunities that currently exist can be found in the history of Bayworld Trading, a startup firm in San Francisco.⁶ Bayworld was founded by Stanford MBA students, originally as part of a class project. Yet the company was premised on a significant business insight. The students realized that the way that beef stomachs were treated with chlorine in the United States reduced their value in China. So the company developed a washing procedure that solved this problem and succeeded. Indeed, at one point, Bayworld was buying almost all of the paunch, honey comb, omasum, and abomasum produced by US packers.

Chinese restrictions on beef imports put in place after the 2003 BSE outbreak in the United States eliminated this opportunity. This has likely deterred other companies from making this type of investment but the underlying business insight remains a powerful one.

To better understand this opportunity, I spoke with several US meat packers as part of the development of this investment study and as part of a project with my co-author Becca Hendricks at the National Pork Board. To understand their response, one must

understand the organizational and market forces under which these packers operate. This industry is probably among the most efficient and competitive in the world. And as is true of all commodity systems, the principal driving force is the ongoing need to squeeze costs faster than competitors and to benefit from economies of scale.

Individual managers in the packing business handle huge volumes of product and are evaluated on the dollar returns that they generate. So, as packers attempt to speed up the rate at which animals are processed, they typically add more workers to each line and reduce the number of steps required of each worker. Space on the packing line is viewed as valuable real estate. Lines can be so densely populated with packing plant workers that there is no room for additional cutting.

At each of our visits to US packing plants, we have pointed out several potentially edible products that have value in China or another international consumer market, yet a typical response has been that the US firm had experimented with adding value but became frustrated with the fluctuation in demand. New customers emerged, paid a premium for a particular product, and encouraged the plant manager to make the changes in the line needed to customize for that particular opportunity. But then, changes in import policy, exchange rates, or importer purchases would cause

demand to fall. Thus the product would accumulate in the freezer. Importers would see the buildup of freezer stocks and offer a lower price to take advantage of the situation.

Paradoxically, the fact that the products that might be adapted and exported are currently selling at a relatively low price also reduces the incentive to find new markets, including but not limited to China. A salesperson that makes a 20 percent markup on exporting high value products at \$4,000 per ton will generate more profit than someone who sells a product worth \$500 per ton with a 40 percent markup.

The solution to the issues described above is for entrepreneurs, who might include Chinese investors, to line up long-term commitments from potential importers and offer long-term purchase contracts to US packers. These entrepreneurs might rent space near the packing plant and make the product modifications or processes there. Assurances of Chinese demand can create a stable and attractive market in this area where none existed or was proceeding in fits and starts.

Opportunity Three: Labor Intensive Exports from China

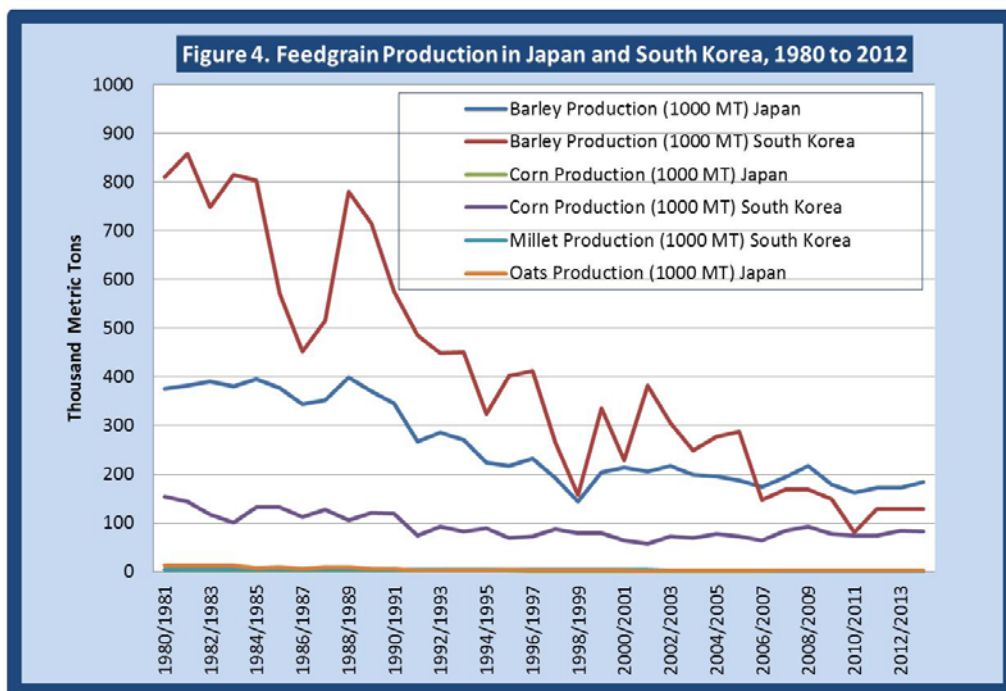
In early 2013, China's new leadership began debating a series of reforms aimed at stimulating the Chinese economy by expanding the role of the market and private industry.⁷

Agriculture in China has always been one of the most distorted industries in the country. On the one hand, farmers have been encouraged, via generous subsidies and market price controls, to grow low value crops to maintain self-sufficiency. But at the same time, Chinese farmers have suffered from a lack of property rights that might otherwise have encouraged them to make fixed investments. Much of the new funds that have been used to modernize agriculture have come from the Chinese government.

What would happen if, as some in China are now suggesting, this bureaucratic management system was replaced by a more considerable introduction of markets and market forces? Figure 4

shows how similar forces in Japan and South Korea influenced the production of crops that are traditionally used for animal feed. Farmers in both countries shifted to an almost complete reliance on imported feed.

If China follows a similar path, then millions of acres of land and tens of millions of people now devoted to corn and wheat production will be freed up to produce the crops in which China has a comparative advantage. China will have an advantage in labor-intensive product because, under almost any projection scenario, Chinese agriculture will continue to have much more labor available per planted acre than almost any other country. If this land and labor is freed up to produce labor-intensive



crops, China could become a dominant producer of flowers, ornamental plants, fruits, and berries, landscape plantings, vegetables, juices, honey, spices, and possibly dozens of other products where the bulk of their production cost is in labor, not land.

These labor-intensive food products could be sold into the rapidly expanding domestic market, or exported to countries where agricultural labor is relatively scarce. Under this scenario, the United States would be a major exporter of feed grains and meat to China, with some of the supply considerations noted in Opportunity One helping to mitigate Chinese concerns about food security, while China would offset this trade with value added agricultural products. This two-way trade should help to strengthen ties and discourage either government from

interfering with the free flow of products.

A mutually beneficial investment scenario arises because successful entrepreneurs would identify these target crops or products, and develop the trade infrastructure and export market. This process has already begun for apple juice, honey, and some selected vegetables, such as garlic. US imports of processed fruit and vegetables from China rose to almost \$1 billion in 2012. Fruit and vegetable juice imports equaled \$634 million, and fresh vegetable imports rose to \$168 million (up from \$91 million in 2008).⁸

The rise of market incentives in China would afford a logical opportunity to demonstrate the considerable power of the laws of comparative advantage—and to use this power to improve living standards on both sides of the Pacific.

Endnotes

¹ Nicola Davison, "Rivers of blood: the dead pigs rotting in China's water supply," *The Guardian*, March 29, 2013, accessed at

<http://www.guardian.co.uk/world/2013/mar/29/dead-pigs-china-water-supply>.

² US Department of Agriculture, Production, Supply, and Distribution (PSD Online), accessed at <http://www.fas.usda.gov/psdonline/>.

³ See page 31 of <http://www.pork.org/filelibrary/PRRSre.pdf>.

⁴ US Department of Agriculture, Production, Supply, and Distribution (PSD Online).

⁵ Global Trade Atlas 2013.

⁶ See <http://www.trademarkia.com/golden-cow-74709328.html> for an example of the Bayworld trademark.

⁷ Wenguang Huang, "What to expect from China's new leadership," *Fortune*, March 7, 2013, accessed at <http://finance.fortune.cnn.com/tag/xi-jinping/>.

⁸ US Department of Agriculture data, accessed at <http://www.fas.usda.gov/gats/ExpressQuery1.aspx>.

The Paulson Institute's Program on Cross-Border Investment

There are compelling incentives for the United States and China to increase direct investment, including prospective Chinese investment in the United States. US FDI stock in China was roughly \$60 billion in 2010. Yet Chinese FDI stock in the United States has hovered around just \$5 billion. For China, investing in the United States offers the opportunity to diversify risk from domestic markets while moving up the value-chain into higher-margin industries. For the United States, meanwhile, leveraging Chinese capital could, in some sectors, help to create and sustain American jobs.

As a nonprofit institution, The Paulson Institute does not “do deals” or participate in any investments. But by building out a sector by sector approach—launched in 2012 through our US-China agribusiness program—the Institute has begun through its research to highlight commercially real and “invest-able” opportunities, and to convene relevant players from industry, the capital markets, government, and academia. The Institute's goal is to focus on specific and promising sectors rather than treating the question of “investment” abstractly.

We are developing nonprofit programs and publishing investment studies in the public interest in an effort to identify tangible opportunities where a serious commercial case for investment exists and the underlying economics (and politics) are supportive. We are looking, too, at constraints and obstacles—in other words, areas where investment opportunities are much talked about by Chinese and Americans in the abstract but are not anchored in underlying economics or a realistic investment case. Ultimately, we are attempting to highlight concrete lessons from specific successes—and failures. The Institute's aim is to help develop sensible investment models that reflect economic and political realities in both countries.

The Paulson Institute currently has three investment-related programs:

1. US-China Agribusiness Program:

The Institute's agribusiness programs aim to support America's dynamic agriculture sector, which needs new sources of investment to sustain innovation and create jobs. These programs include:

- A US-China Agricultural Investment Experts Group, comprised of some of the leading names in American agribusiness. The group advises on and brainstorms ideas, and examines potential investment models in the sector.

- An agribusiness-related investment workshop bringing key players and companies together. The Institute held the first workshop in Beijing in December 2012, with future sessions rotating between China and the United States.
- Commissioned studies and reports on investment opportunities in US-China agribusiness and bioenergy.

2. US-China Manufacturing Program:

In June 2013, the Institute, in partnership with McKinsey & Company, launched a program on the major trends that will determine the future of global manufacturing. We aim to identify mutually beneficial manufacturing partnerships, including those that might support job growth in the United States, that reflect these underlying economic dynamics. The Institute's principal programs include:

- Papers that the Institute is co-developing with partners.
- Workshops in Beijing, California, and Chicago with Chinese, American, and global CEOs and thought leaders.

3. Case Study Program:

The Institute is publishing in-depth historical case studies of past Chinese direct investments in the United States, examining investment structures and economic, political, business, and investment rationales to draw lessons learned.

About The Paulson Institute

The Paulson Institute, an independent center located at the University of Chicago, is a non-partisan institution that promotes sustainable economic growth and a cleaner environment around the world. Established in 2011 by Henry M. Paulson, Jr., former US Secretary of the Treasury and chairman and chief executive of Goldman Sachs, the Institute is committed to the principle that today's most pressing economic and environmental challenges can be solved only if leading countries work in complementary ways.

For this reason, the Institute's initial focus is the United States and China—the world's largest economies, energy consumers, and carbon emitters. Major economic and environmental challenges can be dealt with more efficiently and effectively if the United States and China work in tandem.

Our Objectives

Specifically, The Paulson Institute fosters international engagement to achieve three objectives:

- To increase economic activity—including Chinese investment in the United States—that leads to the creation of jobs.
- To support urban growth, including the promotion of better environmental policies.
- To encourage responsible executive leadership and best business practices on issues of international concern.

Our Programs

The Institute's programs foster engagement among government policymakers, corporate executives, and leading international experts on economics, business, energy, and the environment. We are both a think and "do" tank that facilitates the sharing of real-world experiences and the implementation of practical solutions.

Institute programs and initiatives are focused in five areas: sustainable urbanization, cross-border investment, executive leadership and entrepreneurship, conservation, and policy outreach and economic research. The Institute also provides fellowships for students at the University of Chicago and works with the university to provide a platform for distinguished thinkers from around the world to convey their ideas.