

Competitiveness in Production of Agricultural Commodities: What Not to Consider*

-by Neil E. Harl[†]

The debate has raged for centuries, going back to Adam Smith's time,¹ over the elements of competitiveness, how those elements should be weighted and the welfare implications of tariffs and duties enacted to modify a country's competitive position. From that great mass of literature, one can readily conclude that the level of competitiveness of a country is complex; is a dynamic, changing relationship; and can be (and has in the past been) misunderstood. The purpose of this paper is to restate² the proposition that land costs are not properly considered as an element of competitiveness, to touch on tax policy as a factor bearing on competitiveness, and to examine the impacts of globalization on the competitiveness of U.S. agriculture.

I. Why land costs are irrelevant to competitiveness

In recent months, allegations have been made by individuals and commodity groups in this country that U.S. producers of agricultural commodities are not competitive in the production of soybeans, particularly vis-à-vis Brazilian producers. Some of the allegations have been accompanied by recommendations that policy steps should be taken to reduce farmland values in this country. While there are various reasons for supporting policy actions that would reduce farmland values, including the reduction of government farm program outlays, deliberately reducing land values to enhance international competitiveness is clearly wrong headed.

Permit me first to make the point that land costs are a cost – just as real as fertilizer, seed, chemicals, labor and machine costs, for an individual producer. However, from an international perspective, land costs are different and it is improper to treat land costs as a cost in international competitiveness calculations.

Expected gains are bid into cash rents and capitalized into land values

In every country operating under a market economy, producers invariably and universally, bid the present value of expected net profits into cash rents and investors capitalize the present value of expected net profits into land values. That has been the case in the United States throughout its history. It will also be the case in Brazil and in fact is in areas where transportation costs are lower and, to a degree, elsewhere in the

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¹ See Smith, Adam, *An Inquiry Into The Nature and Causes of The Wealth of Nations* (1776); Hobshawn, Eric, *Industry and Empire: The Birth of the Industrial Revolution* (1999).

² See Baumel, C. Phillip, Kelvin Leibold, Robert W. Wisner, Neil E. Harl and Marty McVey, "Midwest Producers Can Compete with Brazil," *Feedstuffs*, vol. 74, no. 2, January, 14, 2002, pp. 24-25.

country. That is an economic outcome that is the consequence of the operation of a market economy where land is viewed as a limiting factor in increasing profits from production. In an agricultural economy characterized by nearly perfect competition, with no producer in a position to influence price with their output decisions, and with price per unit of output influenced little, if at all, by scale of production, that is the outcome. That result is not decreed by government; rather it is the consequence of the type of economic system utilized for resource allocation and income distribution.

Actually, land values are influenced principally by three variables (1) the present value of expected net profits from production; (2) the present value of expected government subsidy payments (which may have a different discount rate than the discount rate for calculating the present value of expected net profits from production); and (3) expected gains from inflation and from non-farm development pressures where advancing land uses would result in even greater amounts capitalized into land values because of locational advantages.

The formula for bidding expected returns on farmland into land values is simple and well-known, where V equals land value per unit (per hectare or per acre), a is the net return per unit in the ith year and r is the discount rate

$$V = \frac{a_1}{1+r} + \frac{a_2}{(1+r)^2} + \dots + \frac{a_n}{(1+r)^n}.$$

As n approaches infinity, it becomes

$$V = \frac{a}{r}$$

where a is the average annual net return per unit of land.

Indeed, this formula explains why farmland has value and is, indeed, used widely by land appraisers to obtain an estimate of the value of land.

While U.S. land values have fluctuated in recent years, it is reasonably clear that investors in the United States (including producer-investors) are capitalizing part of the returns from commodity production into land values. It is equally clear that investors (including producer-investors) are capitalizing part of the expected government subsidy payments into land values. Likewise, it is empirically verifiable in virtually all metropolitan areas, certainly in all metropolitan areas that are expanding horizontally, that expected economic benefits from development are being capitalized into land values, well before the conversion in land use occurs.

Thus, land values are the result of expected profitability from all three sources, not a contributor to costs. Any policy move that would reduce the stream of expected economic benefits reduces land values to some extent. Reducing government subsidies could have that effect, reducing commodity prices would have that effect (without comparable reduction in costs) and imposing strict limitations on conversion of farmland to non-farm use would likewise result in a decrease in land values, at least in areas of imminent conversion.

To sum up, land values are price determined, not price determining.

Lessons from repeal of the British Corn Laws

The Corn Laws (which applied to most cereals and were broader than just corn) were a series of statutes first introduced in the British Parliament in 1804 when landowners, who dominated the British Parliament, sought to protect their economic

position by imposing a duty on imported corn. During the Napoleonic Wars, the British had blockaded the European Continent with the objective of isolating the Napoleonic Empire and imposing economic hardship on the French. One result of the blockade was higher prices for British products which, for agricultural products, resulted also in higher prices for land. When the Napoleonic Wars ended, in 1815, the first of the Corn Laws was actually enacted. The first Corn Law stated that no corn could be imported into Britain until domestic supplies reached 80 shillings per quarter (approximately eight bushels). With the nobility and other larger landowners benefiting from the higher commodity prices and higher land values, and with voting dependent upon land ownership, the Parliament resisted calls for repeal until 1828 when the system was shifted to a sliding scale tariff. In 1832, the right to vote was extended to a sizeable portion of the merchant class. In the year following, several political groups were formed to push for major reform which occurred in 1846 under the government of Sir Robert Peel. The failure of the Irish potato crop in 1845 and the mass starvation that followed forced Sir Robert Peel and his conservative government to reconsider the wisdom of the Corn Laws. The legislature result was that a new Corn Law was passed that reduced the import duty to the insignificant sum of one shilling per quarter.

At the time of repeal, the belief was widespread that the higher land prices in Britain would continue to keep corn prices high. The result, of course, was a sharp decline in commodity prices, a sharp reduction in land values and large areas of England reverted to pasture land. The dramatic reduction in import duties left investors in farmland much less to capitalize into land values. The move established the notion that land values are price determined, not price determining.³

Comparing non-land costs

If it is inappropriate to include land costs as a factor in determining competitiveness, the question becomes one of how non-land costs compare with those of other countries. In 2002, Baumel et al.⁴ estimated that the total cost of producing genetically modified soybeans in west central Iowa was about \$2.37 per bushel more than in Brazil. However, Brazil's non-land production costs were only 21 cents per bushel lower than Iowa's non-land costs. Tables 1 through 4 contain the latest available data.

³ For an interesting discussion of the effects of the Corn Laws, see Parson Thomas R. Malthus, *Observations on the Effect of the Corn Laws, and of a Rise or Fall in the Price of Corn on the Agriculture and General Wealth of the Country*, J. Johnson & Co., St. Paul's Church-Yard, London, 1814. See also Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations* (1776), which Rev. Malthus discusses at length and which was influencing policy makers who were considering more emphasis on free trade.

⁴ See note 2.

Table 1. Cost of producing soybeans (U.S. \$/bu.)

Cost	Non-GMO, Mato Grosso	GMO, Iowa
Seed and inoculant	0.16	0.36
Fertilizer	0.94	0.54
Labor	0.20	0.40
Chemicals	0.48	0.60
Crop insurance	0.00	0.06
Machinery	0.68	0.86
Other	0.32	0.28
Total non-land cost	2.78	3.10
Land	0.64	2.80
Total	3.42	5.90

Table 2. Comparative transport rates per bushel of soybeans (U.S. \$)

	Sapezal to Itacoatiara (Rio Madeira)	Jefferson to NOLA (Mississippi River)
Truck 580 miles to Porto Velho	0.68	-----
Rail 200 miles to E. Clinton, Ill.	-----	0.27
Transfer to barge	0.07	0.04
Barge 600 miles to Itacoatiara	0.34	-----
Barge* to NOLA	-----	0.28
Total to ocean ports	1.09	0.59
Ocean to N. Europe	0.42	0.39
Total to N. Europe	1.51	0.98

*Barge at 190% of tariff

Table 3. Non-land production and transport costs for Brazil and U.S. soybeans to northern Europe (U.S. \$/bu.)

Cost	Sapezal	Jefferson
Non-land production	2.78	2.99
Transport to:		
Export port	1.09	0.59
Import port	0.42	0.39
Total non-land cost to import port	4.29	3.97

Table 4. Cost of soybeans delivered to Santos and NOLA (U.S. \$)

Origin	Brazil Rondonópolis	Iowa Jefferson
Destination	Santos	NOLA
Non-land production costs	2.78	2.99
Truck-rail costs to port	1.31	0.59
Total non-land to port	4.09	3.58
Land	0.51	2.80
Total cost to port	4.60	6.38

Source: Baumel, Leibold, Wisner, Harl and McVey

However, as Baumel et al.⁵ point out, this is not quite the end of the story. In the case of soybean exports, it is the total non-land costs in soybeans delivered to the importing ports that determine international competitiveness. By the Baumel et al. calculations, the cost of transporting soybeans from Mato Grosso to Northern European ports is approximately \$1.51 per bushel compared with 98 cents per bushel for shipment from west central Iowa to the same Northern European ports. The higher transport costs from Brazil more than offset the slightly lower non-land costs (not counting transportation) such that the combined non-land costs plus costs of transport were about 32 cents per bushel higher for Brazilian soybeans.

Consequences of increases in production in Brazil

In 1965, Brazil had roughly two percent of the world soybean trade compared to the U.S. share of 75 percent of the world soybean trade.⁶ By 2001, the Brazilian share had

⁵ See note 2.

⁶ Baumel et al., note 2.

increased to 23 percent and the U.S. share had fallen to 43 percent.⁷ The dramatic increase in Brazilian production had driven the world supply curve to the right as vast areas of Brazil were cleared for production of soybeans and other crops. That phenomenon is not indicative, however, of non-competitiveness on the part of U.S. producers. Although the picture is complicated by substitution of other crops for soybeans, with increased world supplies encouraging some substitution to other, more profitable crops, it can be argued that U.S. producers are competitive so long as the most profitable crop produces sufficient profit to leave some portion capitalized into land values.⁸

II. The impact of tax policy on competitiveness

Some place a great deal of emphasis on tax policy, particularly corporate tax policy, on competitiveness. Indeed, the U.S. Congress has legislated repeatedly to ease the income tax burden in an effort to improve the competitive position of U.S. firms. The Extra-Territorial Income Exclusion Act of 2000,⁹ which permitted a portion of income from export products to be excluded from income, was roundly criticized by the World Trade Organization (WTO) as "inconsistent with world trade agreements" and was replaced in 2004 by a deduction (of three percent, rising to nine percent after 2009) of net income for all domestic production and manufacturing, was one in a long line of export tax breaks over the past several decades. The latest enactment has little to do with exporting and provides a tax deduction for all domestic production and manufacturing.

That legislation comes at a time when U.S. corporate income taxes have fallen sharply as a percentage of gross domestic product from 4.0 percent in 1965 to 1.6 percent in 2002.¹⁰ At the same time, corporate income taxes in the OECD countries had risen to 3.0 percent of gross domestic product.¹¹ In 2003, U.S. corporate taxes were only 1.5 percent of our GDP. As has been noted, taxes are a relatively small factor in international competitiveness and rank among other key factors such as labor productivity, labor costs, access to markets and access to supplies.¹²

Social insurance and other wage taxes have risen, worldwide, in recent years.¹³ In the U.S., such taxes have risen from 3.3 percent of GDP to 6.9 percent in 2002.¹⁴ In the other OECD countries, social insurance and other wage taxes rose from 6.5 percent of GDP in 1965 to 10.9 percent in 2002.¹⁵

Reliance on sales, excise and other consumption taxes has fallen, worldwide, since 1965. In 1965, total federal, state and local consumption taxes in the United States

⁷ Id.

⁸ See Harl, Neil E., Review of the End of Agriculture in the American Portfolio, by Steven C. Blank, presented at the annual meeting of the National Association of State Universities and Land-Grant Colleges (NASULGC), San Francisco, CA, November 6, 1999 (copy of the review is available from the reviewer).

⁹ Pub. L. No. 106-519, 114 Stat. 2423 (2000).

¹⁰ Organisation for Economic Co-operation and Development, *Revenue Statistics 1965-2003* (2004).

¹¹ Id.

¹² Fisher, Peter, Research Director, Iowa Policy Project, The University of Iowa, Iowa City, Iowa, personal communication, October 20, 2005.

¹³ Organisation for Economic Co-operation and Development, *Revenue Statistics 1965-2003* (2004).

¹⁴ Id.

¹⁵ Id.

were 5.6 percent of GDP, dropping by 4.6 percent in 2002.¹⁶ In the other OECD countries, consumption taxes were 9.7 percent of GDP in 1965 and were 9.5 percent of GDP in 2002.¹⁷

III. Impact of globalization on agriculture

Complicating further the complex issue of international competitiveness is the fact that globalization is almost certain to produce highly important consequences for the U.S. agricultural sector. Few, if any, 80 years ago, could possibly have anticipated the enormous transformation of the agricultural sector in the eight decades to come. That dramatic change was attributable to two major forces – (1) the technology of power, that set the stage for larger and larger farms, needing less and less labor to produce the needed food and fiber; and (2) the technology of seed and genetics that boosted productivity to levels unimagined in 1925, and that enabled a much greater population to be fed but passed along the benefits, largely, to consumers and, to a lesser degree, landowners.

The key issue now is what will characterize the sector over the next 80 years? Or even over the next two decades?

The expected forces over the next 80 years

My belief is that the next 80 years will be dominated by the economic forces of trade and globalization. The trend is clear, and the driving force (an almost universal desire on the part of consumers to live better) is certain to continue. Food, fiber and every other commodity will be produced where the cost to the consumer is the least. It's led to outsourcing of everything imaginable – development of computer software, audit of tax returns, conduct of surgical procedures, accomplishment of secretarial duties, and manufacturing of almost every product used by the human family, to mention only a few where the product or service is mobile. The trend will almost certainly continue – because consumers love a deal.

But agriculture promises to be different. Soils and climate are not mobile – so crops will continue to be produced heavily where the cost (including transportation cost) is the least, concentrated in areas with a combination of favorable climate and productive soils. Thus, crops are unlikely to be "outsourced" so long as U.S. production is not undercut, price-wise, by areas outside the country. Livestock is mobile, and could move offshore, but livestock production tends to be tethered rather tightly to low cost feed grains. Moreover, globalization is leading to and will continue to lead to better incomes in the low income countries. Those are the countries where the percentage of additional income going for food is extra-ordinarily high. So as incomes rise in countries devoting, say, 75 percent of additional income for food (the figure in this country is down around 20 percent) it means a dramatic increase in food demand. That is good news for U.S. farmers . . . and it addresses one of the great problems of the ages – eliminating hunger and malnutrition. The three most important barriers to solving the world food problem are income, income and income.

¹⁶ Id.

¹⁷ Id.

But there's a downside to all of this. There's an economic theorem that holds that as trade becomes unimpeded across national boundaries (and we are headed down that road), as capital is free to move across national boundaries without limitation (and that is largely the case today) and as technology is equally available everywhere (and commercializing companies generally try to market their new technologies in every direction as soon as possible), returns to labor and land of the same quality are expected to trend toward the same level. That is a great worry for those with skills in competition with those in developing countries and it is a major reason why we simply must put more of our resources in moving labor in this country up the productivity scale so they are not in direct competition with low income peoples around the world. Otherwise, there's a great leveling effect world-wide with increasing difficulty in maintaining a premium standard of living in this country. A higher standard of living has characterized this country for a very long time.

So what needs to be done?

From a policy perspective, the task for the agricultural sector is, bluntly, to shape the economic forces without losing the benefits of efficiency. Here's my list –

First, agriculture must reduce cost externalities (odors, stream pollution, ground water pollution and ocean pollution as well as pollen drift from GMOs, especially for biopharmaceutical products) to acceptable levels. Society will not long tolerate anything less.

Second, the benefits of federal farm programs (to the extent such programs continue) much be shaped to eliminate the advantage of the largest operations in using their economies of scale to bid up cash rents and land values, to the detriment of midsize and smaller operators. It's not consumers who benefit from the lower costs of production of the largest operations; *gains from efficiency from the largest operations are not passed along to consumers*. The gains from bigness go heavily to acquire additional land. From a policy perspective, it's a question of federal funds being used to help the largest operators become even larger and there's little public interest in that.

Moreover, the future of federal farm programs is clearly in doubt. The final WTO decision raises serious questions about U.S. commodity programs. Those programs must be recast in a different mold or the U.S. will be in a position of turning its back on the WTO, which the United States took the lead in creating years ago.

Third, society should reaffirm whether it prefers an agricultural sector of independent entrepreneurs or a sector of serfs. If it is the former, and I believe the former is more consistent with a healthy rural America, then increased attention must be given to mergers, consolidations, contract practices and other factors that reduce the management role of the producer. With towering concentration on the input side and towering concentration on the output handling, processing and shipping sides, producers are vulnerable. That vulnerability is the greatest where a purchaser is regionally dominant even though the level of concentration at the national level is not worrisome. It's not enough to take the position that any structural result that can deliver benefits to consumers is acceptable, not if society values a sector of independent entrepreneurs.

From several perspectives (trade, Third World economic development, food safety, food security and cross-border environmental problems) it is becoming clear that

increasing emphasis should be placed on a *global* food and agriculture policy. That is the new frontier for the Twenty-First Century. Eighty years ago, the debate was over the question of whether there was room for a *national* food and agriculture policy. We're now at a different crossroads.

Finally, a further word on supporting Third World economic development: that move would clearly be in the long term best interests of the human family. Even if one's interests go no farther than national security, in a world of disharmony, eliminating world hunger is a worthy goal on a priority basis. That's why we need to be peering ahead from a platform of a global food and agriculture policy in the Twenty-First Century.

In conclusion

Clearly, the debate on international competitiveness needs to be focused on non-land costs, comparative transportation costs to importing ports and shifting exchange rate differentials, but not on land values. In every country producing agricultural commodities in a market economy, investors and land-owning producers will capitalize much of the profitability remaining after payment of non-land costs into the land, one way or another. From a policy perspective, that segment of profitability may merit attention, particularly to the extent that amount includes the present value of expected government subsidies but it is improper and inappropriate to consider land costs in determining levels of international competitiveness.

It is also clear that altering the tax structure to improve competitiveness needs to be done very carefully, with more care than was given to the 2004 change.