



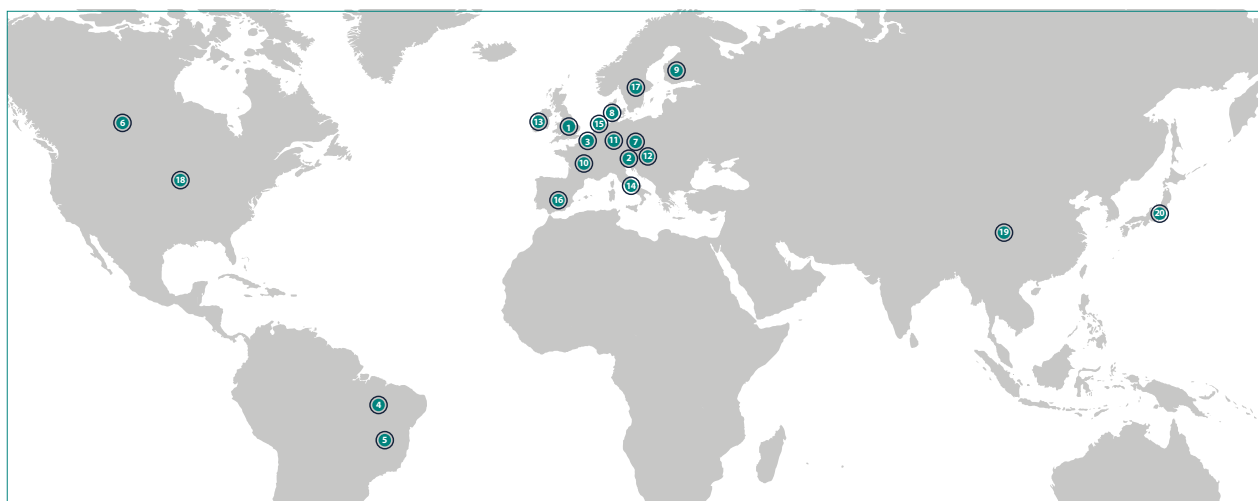
Benchmarking the cost of raising pigs: Country comparisons and factors contributing to their relative advantage or disadvantage in a global market.

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Despite recent nationalistic tendencies, the global pandemic, and other trends working against global trade, pork producers are not insulated from competition with producers in other countries. In a July 2020 report on world markets and trade of livestock and poultry, the United States Department of Agriculture's Foreign Agricultural Service estimated that 10.9 million tons of pork will be exported in 2020¹. Pork producers around the world are competing in a global market. While that market can, and is, distorted by politics and trade relations, the global competitiveness of individual countries still matters. How much does the cost of producing pork vary from one country to another, and what factors contribute to their relative advantage or disadvantage in a global market? I recently had the opportunity to collaborate with Drs. Lee Schulz and Dermot Hayes in the Department of Economics at Iowa State University to address this question².

The analysis of productivity, costs, and returns are for 2018 using data primarily from InterPIG, an international benchmarking network.

The representatives of the seventeen participating countries in Europe, North America, and Brazil come from scientific institutions and extension services of producer organizations. The InterPIG data is updated annually and represents a countrywide average performance of representative farms in each country. In addition to the information from InterPIG, data for Japan and China, two key pork

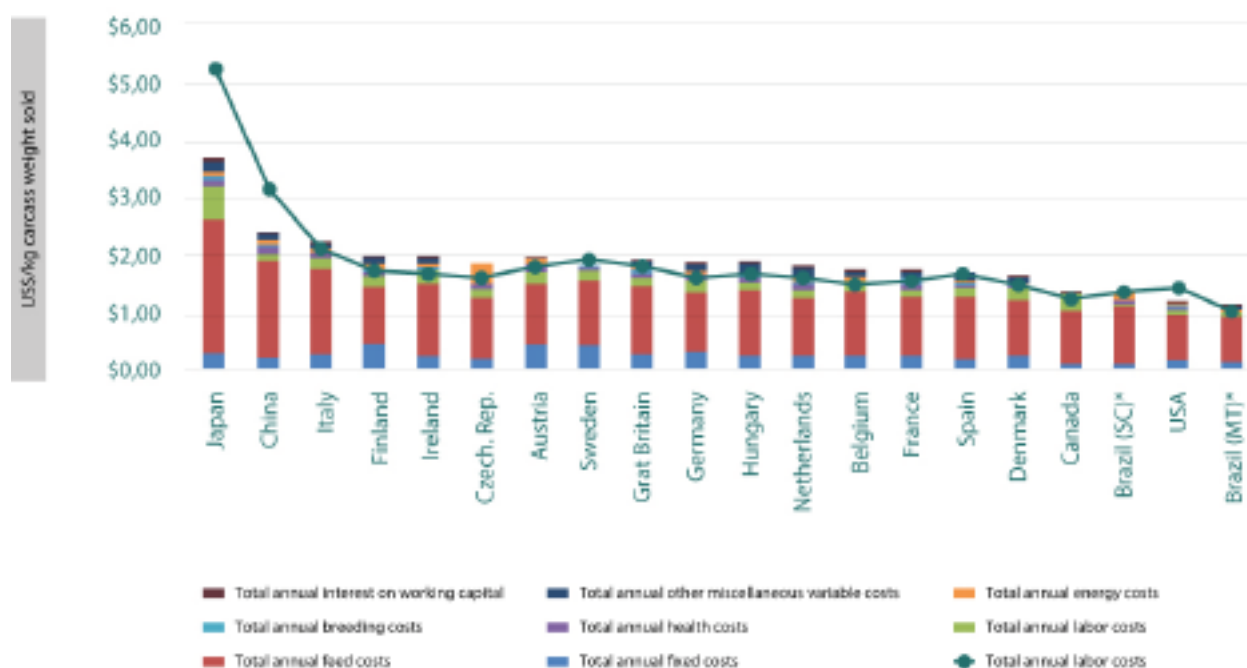


1	Great Britain	Agriculture and Horticulture Development Board (AHDB)
2	Austria	VLV Upper Austria
3	Belgium	Flemish Government and Boerenbond Belgie
4	Brazil	Embrapa Swine and Poultry
5	Brazil	Submits data for two regions: Mato Grosso (MT) and Santa Catarina (SC)
6	Canada	Canadian Pork Council
7	Czech Republic	Institute of Agricultural Economics and Information (UZEI)
8	Denmark	SEGES
9	Finland	Atria
10	France	IFIP
11	Germany	Thuenen Institute and Interessengemeinschaft der Schweinehalter (ISN)
12	Hungary	AKI Research Institute of Agricultural Economics
13	Ireland	Teagasc
14	Italy	Research Centre for Animal Production (CRPA)
15	Netherlands	Wageningen Economic Research
16	Spain	SIP Consultors
17	Sweden	Svenska Pig
18	USA	Iowa State University
19	China	Producers and Veterinarians in China
20	Japan	Japanese Ministry for Agriculture Fisheries and Forestry

The estimated cost of production from breed-to-market in 2018 ranged from US\$3.65 per kg of carcass weight sold in Japan to US\$1.11 per kg of carcass weight sold in the state of Mato Grosso of Brazil, a difference of US\$2.54 between the highest and lowest cost countries (Figure 1, bars).

The line in Figure 1 represents the market pig price or revenue on a per kg of carcass weight basis. The difference between the top of each stacked bar (total cost) and the line (revenue) represents the profit in each country.

Figure 1. Cost of production and revenue for each country (US\$ per kg of carcass weight), breed-to-market.



**Brazil has two data points because of the large differences that exist between the traditional hog farming areas of Santa Catarina and the new frontier in Brazilian pork production, Mato Grosso.*

What are the major factors that give each country a competitive advantage or disadvantage? To answer this question, we set all of the values used to estimate productivity, costs, and revenue for each country at the same value, the average value for all countries. The only value(s) that varied for each country was those for the factor evaluated. Each factor was evaluated alone, one-at-a-time. Any differences in profitability, therefore, were due strictly to the country differences in the values for the factor evaluated. The relative advantage or disadvantage in

profitability for the factors are shown in Table 1. Low feed prices in the USA give producers there a US\$0.33 per kg of carcass weight advantage over a country with average feed prices, such as the Netherlands. The USA's advantage over the Netherlands is actually US\$0.34 since the Netherlands has a US\$-0.01 disadvantage to the average. This means that if we could wave a magic wand and make the USA and Netherlands equal by every measure except feed prices, with the same market pig prices, same fixed costs, same productivity, etc., producers in the USA would earn US\$0.34 per kg of carcass weight more than those in the Netherlands because they pay less for feed.

Producers in Japan have the highest feed prices giving them a US\$0.74 per kg of carcass weight disadvantage to a country with average feed prices and a US\$1.07 disadvantage to producers in the USA with the lowest feed prices.

After feed prices, country differences in productivity is the next largest contributor to why countries are at a competitive advantage or disadvantage to others. Higher productivity in Denmark and several other countries in Europe contributes positively to their competitiveness. Higher productivity in Denmark gives producers there a US\$0.24 per kg of carcass weight advantage over a country with average productivity and a US\$0.62 per kg of carcass weight advantage over Japan with the lowest productivity. Differences in wage rates, labor usage, and fixed costs, which are primarily a function of building costs, also contribute significantly to the relative competitive position of each country but to a lesser extent than feed prices and productivity.

Table 1. Relative advantage or disadvantage in profitability for each factor (US\$/kg carcass weight), breed-to-market.

Country	Factors				
	Feed prices	Productivity	Wage rates	Labor usage	Fixed costs
USA	\$0.33	-\$0.06	\$0.05	\$0.10	\$0.09
Brazil (MT)	\$0.30	\$0.10	\$0.15	\$0.00	\$0.13
Canada	\$0.23	\$0.03	\$0.00	\$0.01	\$0.14
Finland	\$0.17	\$0.08	-\$0.04	\$0.04	-\$0.18
Hungary	\$0.13	-\$0.14	\$0.12	-\$0.20	\$0.02
Denmark	\$0.12	\$0.24	-\$0.11	\$0.09	-\$0.01
France	\$0.10	\$0.06	-\$0.06	\$0.08	-\$0.01
Sweden	\$0.07	\$0.04	-\$0.09	\$0.07	-\$0.16
Germany	\$0.04	\$0.12	-\$0.07	\$0.05	-\$0.09
Austria	\$0.04	\$0.01	-\$0.02	\$0.02	-\$0.18
Czech. Rep.	\$0.04	\$0.20	\$0.10	-\$0.17	\$0.03
Netherlands	-\$0.01	\$0.17	-\$0.14	\$0.10	-\$0.02
Brazil (SC)	-\$0.01	\$0.07	\$0.15	-\$0.12	\$0.15
Spain	-\$0.06	-\$0.11	\$0.01	\$0.09	\$0.10
Belgium	-\$0.07	\$0.03	-\$0.02	\$0.06	-\$0.03
Great Britain	-\$0.10	\$0.10	\$0.02	\$0.03	\$0.04
Italy	-\$0.10	-\$0.28	\$0.00	-\$0.08	-\$0.16
Ireland	-\$0.13	\$0.14	\$0.00	\$0.04	\$0.02
China	-\$0.33	-\$0.40	\$0.16	-\$0.18	\$0.09
Japan	-\$0.74	-\$0.38	-\$0.20	-\$0.02	\$0.02

References:

1. United States Department of Agriculture (USDA), Foreign Agricultural Service (FAS). Livestock and Poultry: World Markets and Trade. July 10, 2020.
2. Holtkamp D.J., Hayes D. J., Schulz L.L. Key Performance Indicators in Pork Production: An International Comparison. MSD Animal Health. August 1, 2020.