

Livestock Risk Management Considerations

2017 Ag. Economics Agent Update
October 10, 2017
Dodge City, KS



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Broad Risk Points

- Risk is two-sided
 - Price:
 - KS feedlots who hedged near placement did not have “record May 2017” closeouts
 - Would have avoided record losses in 2015 closeouts...
 - Health:
 - On-farm adverse ADG is bad
 - PEDv impact on pork supplies was good for cattle producers
- Generally, absorbing some risk is “necessary”

Approach to Today's Discussion

- “Traditional Price Risk” Considerations
 - Highlight example resources/tools
- **Collective goal:**
 - **broaden our thinking & comfort with price risk discussions**

Risk Considerations: Quantitative Examples

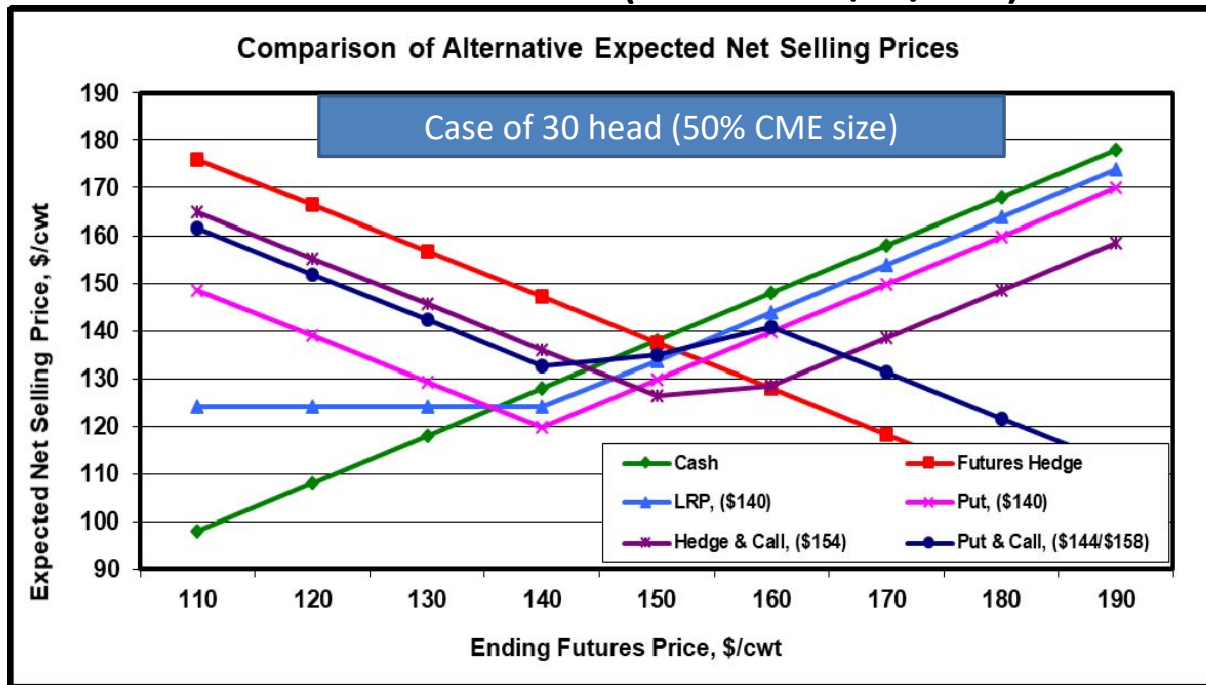
Stockers Output Price Hedging Considerations (as of 10/4/17)

- Dodge City, KS 10/4/17 situation:
 - Buy/Retain 550 lb steer on 10/11/17 = \$160.46
 - Sell 850 lb steer on 3/14/18 = \$137.84
 - Exp. VOG = \$96.37/cwt (\$289.12/hd)
<http://beefbasis.com/VOG.aspx>
- Considering price protection on March sale
 - **USE: *FeederCattleRiskMgmtTool.xlsx***
<http://www.agmanager.info/Tools/default.asp#LIVESTOCK>

Stockers Output Price Hedging Considerations (as of 10/4/17)

- Case of 30 hd @ 850 lbs =
 - Compare alternatives:
 - a) 30 hd on LRP, b) 1 FC Futures Contract (+/- 59 hd per contract), c) 1 FC Options Contract or d) Cash
 - MAR FC: \$149.875; Exp. Basis: -\$12.04; Exp. Cash: \$137.84
 - LRP Coverage Price: \$140.48 & Premium: \$4.212
 - MAR Put @ \$140: \$4.075 premium

Stockers Output Price Hedging Considerations (as of 10/4/17)



<http://www.agmanager.info/Tools/default.asp#LIVESTOCK>

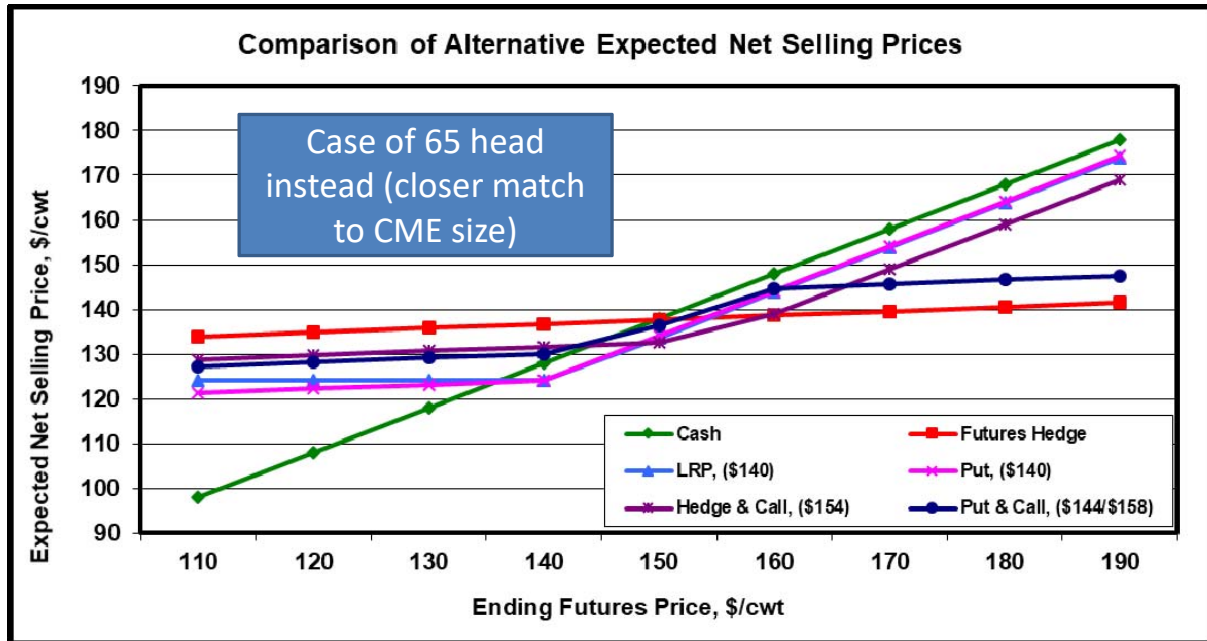
Stockers Output Price Hedging Considerations (as of 10/4/17)

	Futures	LRP	Put	Call	Put	Call
Number of contracts	↑	30	↑	↑	↑	↑
Strike price(s), \$/cwt		\$140.48	\$140.00	\$154.00	\$144.00	\$158.00
Premium, \$/cwt		\$4.212	\$4.075	\$5.600	\$5.350	\$3.900

Futures price	Expected Net Selling Prices					
	Cash	Hedge	LRP	Put	Hedge & Call	Put&Call
\$110.00	\$97.97	\$175.92	\$124.23	\$148.56	\$164.82	\$161.44
\$120.00	\$107.97	\$166.31	\$124.23	\$138.96	\$155.21	\$151.83
\$130.00	\$117.97	\$156.70	\$124.23	\$129.35	\$145.60	\$142.22
\$140.00	\$127.97	\$147.09	\$124.23	\$119.86	\$135.99	\$132.61
\$150.00	\$137.97	\$137.48	\$133.75	\$129.86	\$126.39	\$134.89
\$160.00	\$147.97	\$127.88	\$143.75	\$139.86	\$128.43	\$140.85
\$170.00	\$157.97	\$118.27	\$153.75	\$149.86	\$138.43	\$131.24
\$180.00	\$167.97	\$108.66	\$163.75	\$159.86	\$148.43	\$121.63
\$190.00	\$177.97	\$99.05	\$173.75	\$169.86	\$158.43	\$112.02
\$10.00	<= futures price increment			Signifies maximum price in row		

<http://www.agmanager.info/Tools/default.asp#LIVESTOCK>

Stockers Output Price Hedging Considerations (as of 10/4/17)



<http://www.agmanager.info/Tools/default.asp#LIVESTOCK>

Stockers Output Price Hedging Considerations (as of 10/4/17)

	Futures	LRP	Put	Call	Put	Call
Number of contracts	↑	65	↑	↑	↑	↑
Strike price(s), \$/cwt		\$140.48	\$140.00	\$154.00	\$144.00	\$158.00
Premium, \$/cwt		\$4.212	\$4.075	\$5.600	\$5.350	\$3.900

Futures price	Expected Net Selling Prices					
	Cash	Hedge	LRP	Put	Hedge & Call	Put & Call
\$110.00	\$97.97	\$133.94	\$124.23	\$121.32	\$128.82	\$127.26
\$120.00	\$107.97	\$134.89	\$124.23	\$122.27	\$129.77	\$128.21
\$130.00	\$117.97	\$135.84	\$124.23	\$123.22	\$130.72	\$129.16
\$140.00	\$127.97	\$136.79	\$124.23	\$124.22	\$131.67	\$130.11
\$150.00	\$137.97	\$137.74	\$133.75	\$134.22	\$132.62	\$136.54
\$160.00	\$147.97	\$138.69	\$143.75	\$144.22	\$138.95	\$144.68
\$170.00	\$157.97	\$139.64	\$153.75	\$154.22	\$148.95	\$145.63
\$180.00	\$167.97	\$140.59	\$163.75	\$164.22	\$158.95	\$146.58
\$190.00	\$177.97	\$141.54	\$173.75	\$174.22	\$168.95	\$147.53

\$10.00 <= futures price increment Signifies maximum price in row

<http://www.agmanager.info/Tools/default.asp#LIVESTOCK>

LRP Parameters

Item	LRP-Feeder Cattle	LRP-Fed Cattle
Type of cattle	Heifers, Steers, Brahman, or Dairy	Heifers or Steers
Weight Classification	Less than 600 Lbs. 600 - 900 Lbs.	10 – 14 Cwt. Yield Grade 1- 3
Coverage Levels	70-100%	70-100%
Coverage Price	Varies Daily	Varies Daily
Endorsement Length	13 weeks to 52 weeks (4 week intervals)	13 weeks to 52 weeks
Subsidy	13 Percent	13 Percent
Ending Value Based On....	CME Feeder Cattle Price Index	AMS 5-area weekly average direct slaughter cattle report
Max. Cattle Covered Per Submission	1,000 Head	2,000 Head
Max. Cattle Covered Per Crop Year	2,000 Head	4,000 Head

Fed Cattle Price Risks

- Lawrence & Bortz

(http://www.iowabeefcenter.org/Docs_econ/Management_Cattle_Price_Risk_Futures.pdf)

– IA fed cattle price risk mngt: 1987-2006 assessment

The strategies evaluated were:

Cash:	Sell all cattle at the cash price on the first day of the month
Futures:	Hedge all cattle with futures contracts when cattle enter feedlot
50 Futures:	Hedge 50 % of cattle with a futures contract and sell 50 % on cash market
1 OTM Put:	Buy a put option one strike price out-of-the-money when cattle enter feedlot
ATM Put:	Buy a put option with the strike price at the money when cattle enter feedlot
1 ITM Put:	Buy a put option one strike price in-the-money when cattle enter feedlot

Fed Cattle Price Risks

- Lawrence & Bortz
 - IA fed cattle price risk mngt: 1987-2006 assessment

Table 1. Summary of Returns to Alternative Cattle Feeding Risk Management Strategies, 1987-2006

All returns are \$/cwt.	Average	Minimum	Maximum	Standard Deviation	Positive Returns (%)	Beats Cash Sales (%)
Cash Price	2.76	-9.76	33.77	8.31	64%	NA
Futures	-0.24	-7.83	13.90	3.65	50%	39%
50% Futures	1.27	-5.84	23.83	5.32	62%	39%
1 OTM put	0.98	-10.51	32.07	7.87	55%	14%
ATM put	0.62	-11.23	31.55	7.79	53%	18%
1 ITM put	1.24	-12.01	30.88	7.89	56%	25%

Feedlot Margin Risks

- Schulz, 2013 (<http://www.extension.iastate.edu/agdm/livestock/html/b2-54.html>)

Table 2.2. Percent of Trading Days During Feeding Period that Breakeven +/--\$X could be Hedged for Yearlings, 1993-2012

BE +	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
-\$4	70%	69%	81%	90%	89%	78%	74%	72%	74%	70%	79%	79%	77%
-\$3	67%	66%	75%	86%	88%	69%	65%	60%	65%	61%	71%	72%	70%
-\$2	64%	59%	69%	80%	85%	63%	55%	49%	54%	52%	63%	66%	63%
-\$1	58%	54%	63%	75%	78%	55%	45%	39%	46%	43%	55%	59%	56%
\$0	53%	48%	58%	70%	69%	48%	36%	28%	39%	34%	48%	52%	49%
\$1	49%	41%	51%	63%	58%	41%	25%	22%	30%	24%	39%	42%	41%
\$2	37%	29%	40%	53%	46%	32%	19%	16%	16%	14%	25%	28%	30%
\$3	32%	24%	29%	45%	39%	26%	12%	8%	10%	11%	19%	23%	23%
\$4	21%	15%	23%	31%	32%	19%	7%	6%	5%	8%	13%	14%	16%

Feedlot Margin Risks

- Belasco, 2008 (<http://ageconsearch.umn.edu/bitstream/46563/2/Belasco.pdf>)
 - Relative importance of production risk and price risk in feeding profits
 - KS & NE feedlot data from 11,397 pens between 1995 & 2004
 - Hypothetical KS pen placed March 13, 2008

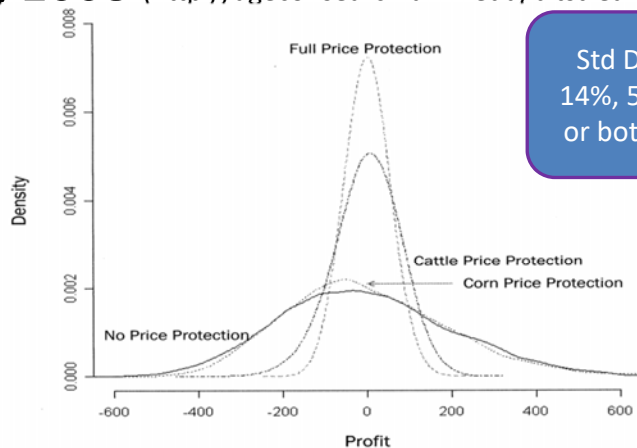
Table 1. Mean Ex Ante Conditional Profits (\$ per head) from Shocks to Production Risk Factors, Under Full Price Coverage

Scenario	Mean	Scenario	Mean
Baseline–No Price Risk	–3.61	Low <i>DMFC</i> (5.26 lbs. feed/lbs. gain)	19.19
High <i>MORT</i> (3.41%)	–34.36	High <i>DMFC</i> (7.43 lbs. feed/lbs. gain)	–92.22
Low <i>ADG</i> (2.56 lbs./day)	–40.22		
High <i>ADG</i> (4.14 lbs./day)	14.64		

Shocks reflect 5th & 95th percentile values of *MORT*, *ADG*, & *DMFC*

Feedlot Margin Risks

- Belasco, 2008 (<http://ageconsearch.umn.edu/bitstream/46563/2/Belasco.pdf>)



Scenario	Mean	Std. Dev.	5%	25%	75%	95%
Full Price Protection	–3.61	37.70	–66.66	28.62	21.81	57.65
Cattle Price Protection	–3.56	125.29	–233.07	–69.45	83.20	164.64
Corn Price Protection	–3.89	257.95	–371.07	–187.76	147.58	463.74
No Price Protection	–3.84	299.79	–457.27	–206.66	179.06	516.73

Figure 1. Distribution of ex ante conditional profits under four types of risk coverage

Other Considerations: “Global Factors”

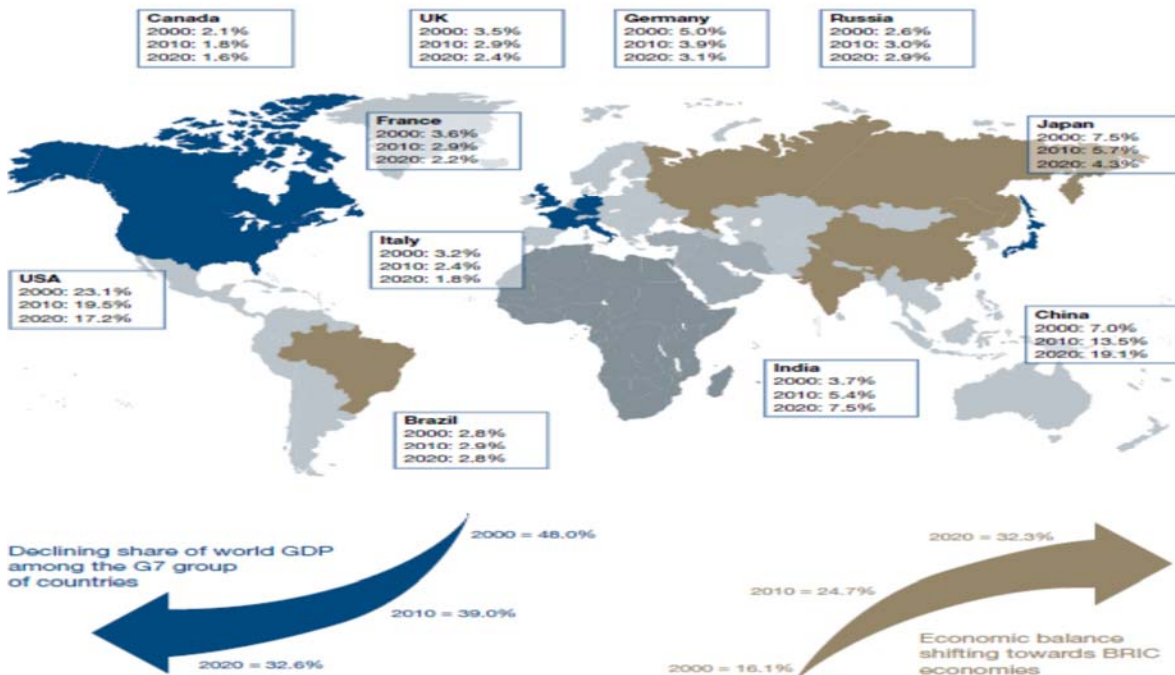
- Adverse developments:
 - Geo-political risks
 - Global GDP forecast reductions
 - U.S. dependent on grain-fed preferences
- Positive developments:
 - Global population & income growth = + meat demand
 - U.S. maintains a comp. position in grain-fed beef globally

Oxford Economics, Mar. 2011

(<https://s3.amazonaws.com/halopublications/128872/open20110301120000.pdf?AWSAccessKeyId=AKIAJEH775QE2PUYLYDA&Expires=1416840692&Signature=9FCzCaZeRzRISLltJ7bichk5Tck%3d>)

Figure 2: Emerging markets take a bigger slice of the world pie

Figures represent % of world GDP.



National Geographic, Nov. 2014

Rising Demand for Meat

Appetite for meat is growing as the developing world becomes more prosperous. But meat—especially beef—can be polarizing, on health, environmental, and ethical grounds. Chicken outpaced beef in the U.S. in 2010. Total U.S. meat consumption peaked in the mid-2000s and has declined ever since. Argentina's famous appetite for beef has fallen because of cholesterol consciousness and economic downturns. In countries where meat is a newly affordable option, animal protein is a boon, not a debate. But by 2050, when the world's population is expected to surpass nine billion, crop production will need to double to provide feed for livestock as well as direct human consumption.

Meat consumption

in calories, per capita per day

Meat products include cow, buffalo, pig, poultry, sheep, goat, horse, ass, mule, camel, rabbit, game, and aquatic mammals.

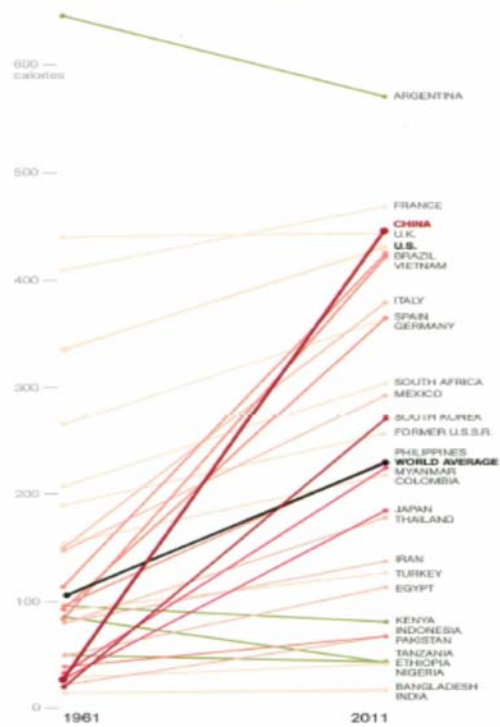
Change from 1961 to 2011



Consumption in 2011



Change in calories from meat per capita per day

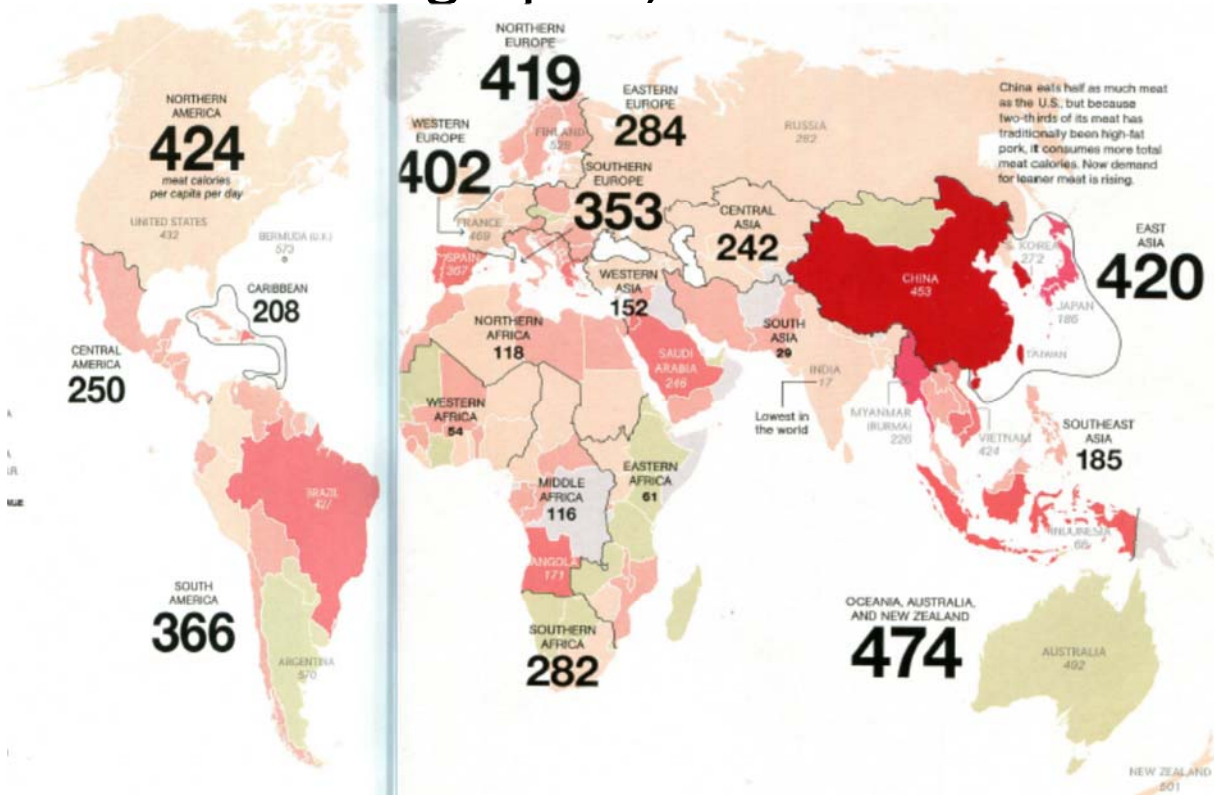


Only countries with populations greater than 40 million shown

National Geographic, Nov. 2014

Meat consumption

in calories, per capita per day



Take-Home Summary Points

- Opportunity or Threat? “Same risks” are often viewed differently across people

- Some risks are quantifiable, many are not

- Everyone must appreciate:
 - Risks are two-sided
 - Your comparative advantage in selecting risks to accept

More information available at:



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