Updated Overview of KSU Domestic Meat Demand Indices

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This short document provides an overview of how updated domestic meat demand indices maintained at KSU are created. Recent research with colleagues at Montana State University (Anton Bekkerman and Gary Brester specifically) indicates that a simple, but important adjustment is warranted in how analysts track domestic meat demand. The new approach is based on changes in expected and observed (or more accurately stated, estimated) quantities. The new meat demand indices are calculated by dividing observed per capita consumption by expected per capita consumption (multiplied by 100 for indexing). This alternative approach is found to better characterize meat demand shifts consistent with indices now retained by KSU.

Before outlining details of the indices, a short refresher on what constitutes demand is useful. A clear distinction between *quantity demanded* and *demand* is necessary to comprehend demand, determinants of demand changes, and more narrowly the demand indices discussed herein. *Quantity demanded* is the quantity of product consumers will purchase at a given price when all other factors are held constant. *Demand* is a schedule of quantities consumers would purchase over a range of prices. Another way to make this distinction is to note *demand* refers to demand curves frequently presented by economists (i.e. graph with prices on a vertical axis and quantity on a horizontal axis) while *quantity demanded* refers to a single point (for a given price) on this demand curve. It is also worth noting demand is not per capita consumption. Per capita consumption (PCC) is simply availability (net volume of domestic production, cold storage adjustments, and international trade) divided by resident population. As this is a measure of product availability, it provides little information regarding demand when considered independently from prices. As an example, PCC can decline when exports increase resulting in reduced availability domestically – this does not necessarily imply domestic demand declined and may simply reflect export demand growth.

To form the demand indices, information is needed on the U.S population, domestic production, imports, exports, and cold storage to derive an estimate of per capita disappearance which is used to approximate observed consumption. Furthermore, we need nominal retail prices, consumer price indices for deflating nominal prices, and price elasticity estimates. To be transparent in how the indices are created here we provide a summary of the sources underlying our creation of demand indices:

- U.S. population is obtained from the St. Louis Federal Reserve.

- Commercial production (pounds) is obtained from the Livestock Marketing Information Center ("catsltr.xls", "hogsltr.xls", and "PoultrySlaughterProduction.xls" spreadsheets).
- Meat import and export quantities (pounds carcass weight equivalent) is obtained from the Livestock Marketing Information Center ("MonthlyTrade.xls" spreadsheet).
    - This data is available beginning in 1988 so that is when our updated demand indices begin.
- Cold storage quantities (pounds) is obtained from the Livestock Marketing Information Center ("Totcdstg.xls" spreadsheet).
- Nominal retail meat prices (cents/lb) are obtained from the Livestock Marketing Information Center ("RETMT.xls" spreadsheet).
- Consumer price indices (1982-1984=100) are obtained from the Livestock Marketing Information Center ("CPI.xls" spreadsheet).
- Estimates of own-price elasticities are used from the most recently estimated models provided by Tonsor, Lusk, and Schroeder (2018). In particular, the own-price elasticity estimates of -0.479, -0.307, and -0.339 are used for beef, pork, and chicken demand indices.

It is further worth noting that several of these individual data series are updated over time or may be released initially as preliminary estimates to subsequently be replaced with "final" estimates following revisions. Accordingly, initial demand index values may be updated as input-data are modified.

References

Bekkerman, A., G.W. Brester, and G.T. Tonsor. "An Alternative Approach to Measure Demand Changes in Meat Markets." *International Food and Agribusiness Management Review*. Forthcoming. Available at: https://www.wageningenacademic.com/doi/10.22434/IFAMR2018.0120

Tonsor, G.T., J.L. Lusk, T.C. Schroeder. "Assessing Beef Demand Determinants." Report Submitted to the Cattlemen's Beef Board. January 2018. Available at: https://www.beefboard.org/news/files/FY2018/Assessing%20Beef%20Demand%20Determinants_FullReport.pdf