

Role of Deflators in Domestic Meat Demand Indices

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In 2019, Dr. Tonsor updated how domestic meat demand indices are derived following research with Drs. Anton Bekkerman and Gary Brester.² Upon recent review and multiple discussions with Dr. Steve Meyer, Dr. Tonsor discovered that this 2019 update involved another adjustment that until recently was overlooked. Narrowly, the KSU based indices have used a Food & Beverage CPI deflator since 2019 and previously used the broader, All-Items CPI deflator. Dr. Tonsor does not recall if this adjustment was intentional and suspects it was a mistake in the 2019 procedural update. This short fact sheet clarifies and documents related details using the case of domestic pork demand strength conclusions for illustration.

How Demand Indices Work

The current KSU approach to monitoring domestic meat demand strength using publicly available data can be summarized as comparing expected disappearance (as a proxy for end-user consumption) quantities with observed quantities. Reported indices are the ratio of observed per capita disappearance to expected per capita disappearance (multiplied by 100 for indexing). Expected volumes reflect presumptions on how price sensitive residents are given past assessments of how purchase volumes adjust with changes in retail meat prices. Past research suggests reasonable assumptions are that volumes purchased decline (increase) 4.79%, 3.07%, and 3.39% for each 10% increase (decrease) in retail price. Economists use own-price elasticities to reflect quantity-price relationships and corresponding elasticities underpin KSU-based demand indices in an attempt to identify periods that demand (rather than quantity demanded reflecting shifts along a demand curve) change and subsequently to quantify the magnitude of this demand shift.

Role of Deflators

A key aspect of implementing demand indices involves careful use of available retail price data. Nominal (not inflation adjusted) prices are reported each month by USDA and are used to approximate what residents pay for meat. Central to this fact sheet is the role of inflation-adjusting these nominal, or raw-reported prices. Narrowly, to reflect the situation faced by U.S. residents in the meat marketplace it is important to consider inflation and

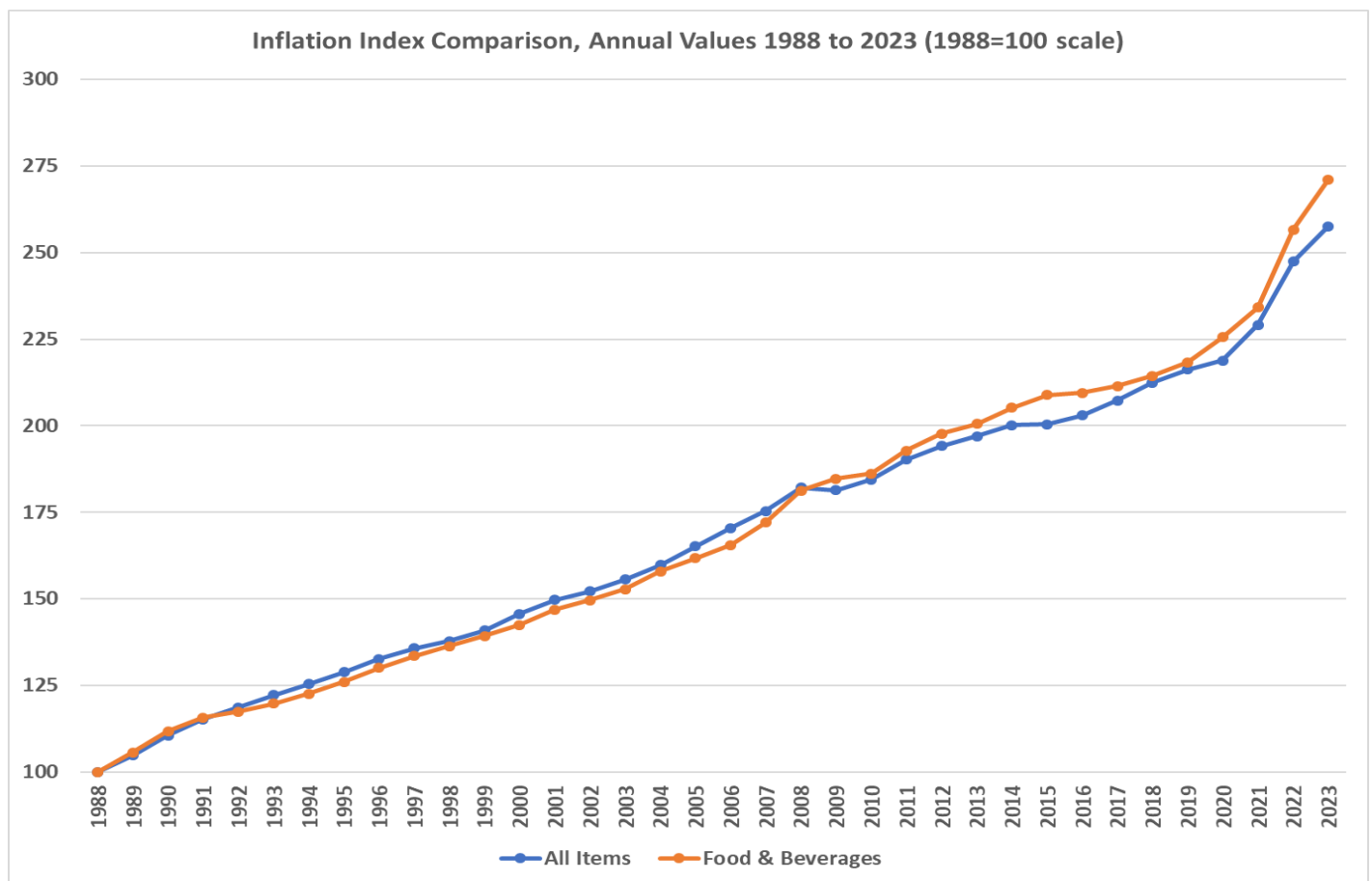
¹ Dr. Tonsor also extends thanks to discussions with Dr. Brian Coffey related to the role of deflator selection.

² A procedural document is posted to AgManager.info here: <https://www.agmanager.info/livestock-meat/meat-demand/monthly-domestic-meat-demand-indices-usdabls-data/updated-overview-ksu>

associated buying power realities. Accordingly, nominal meat prices are adjusted to reflect inflation patterns. As noted in the introduction, Dr. Tonsor has been using the Food & Beverage CPI deflator since 2019 for this purpose.

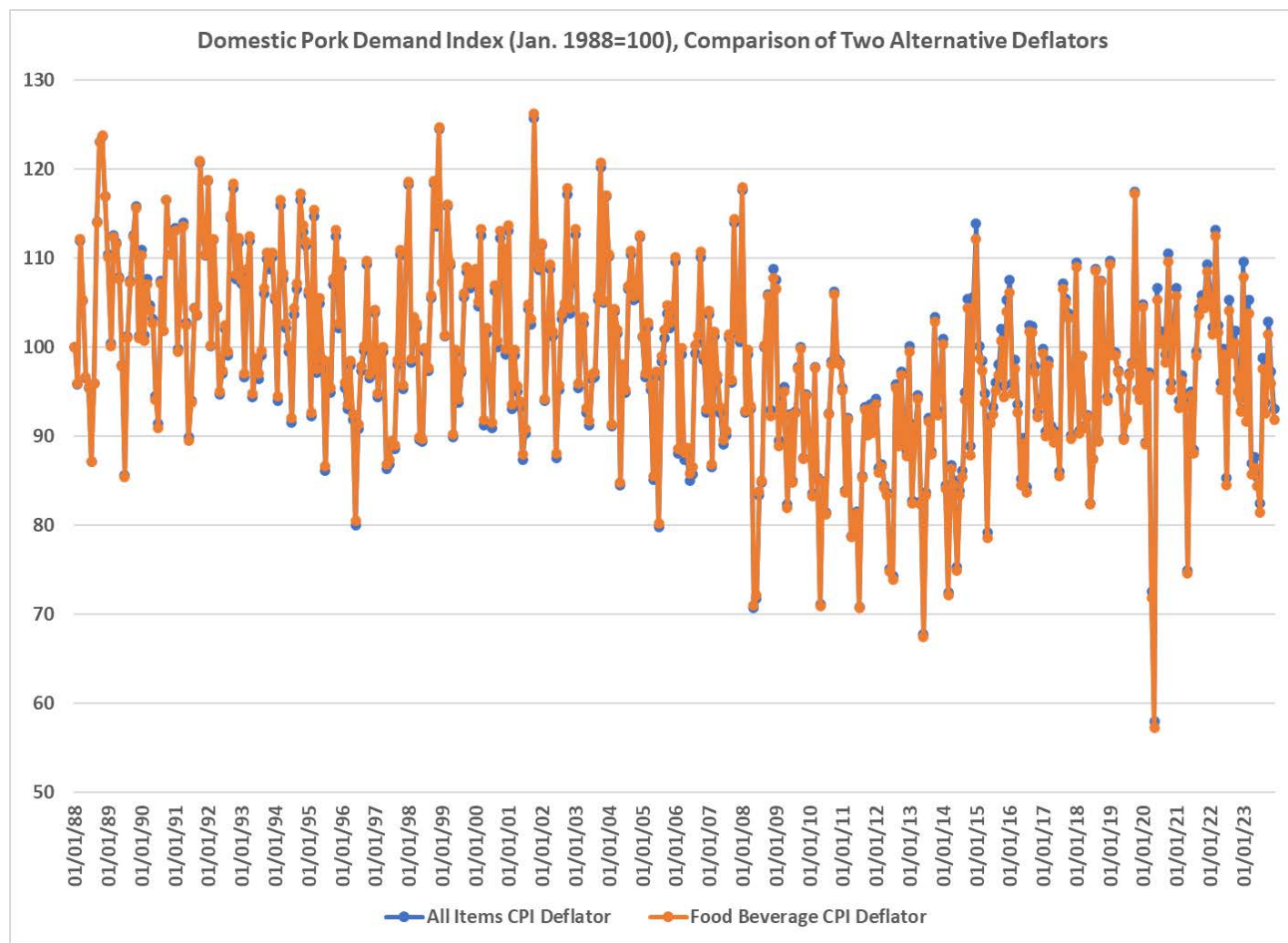
Historically analyst selection of what deflator to use has pragmatically not been overly important. That primarily reflects an extended period of rather low inflation characterizing the U.S. economy. Further, inflation generally impacted most economy sectors similarly, prior to the recent pandemic and related macroeconomic adjustments. To illustrate this, consider the following figure showing annual values for the BLS reported All-Items CPI versus the Food and Beverage CPI. Over the 36 years spanning 1988 to 2023 there were 17 years that the All Items CPI was above the Food & Beverage CPI (mainly earlier years) and 19 years where the opposite occurred (mainly more recent years).

During the 20 pre-pandemic years of 2000-2019, the average annual difference in these two CPI series was 0.8%. Stopping there would suggest use of either deflating index would lead to similar demand conclusions – historically speaking that would be a reasonable assessment. More recently, over the 2020-2023 period the average difference was 3.6% with the Food & Beverage CPI exceeding the All Items CPI reflecting Food & Beverage inflation has recently outpaced inflation in other categories.



Pork Demand Strength Conclusions: Impact of Deflator Selection

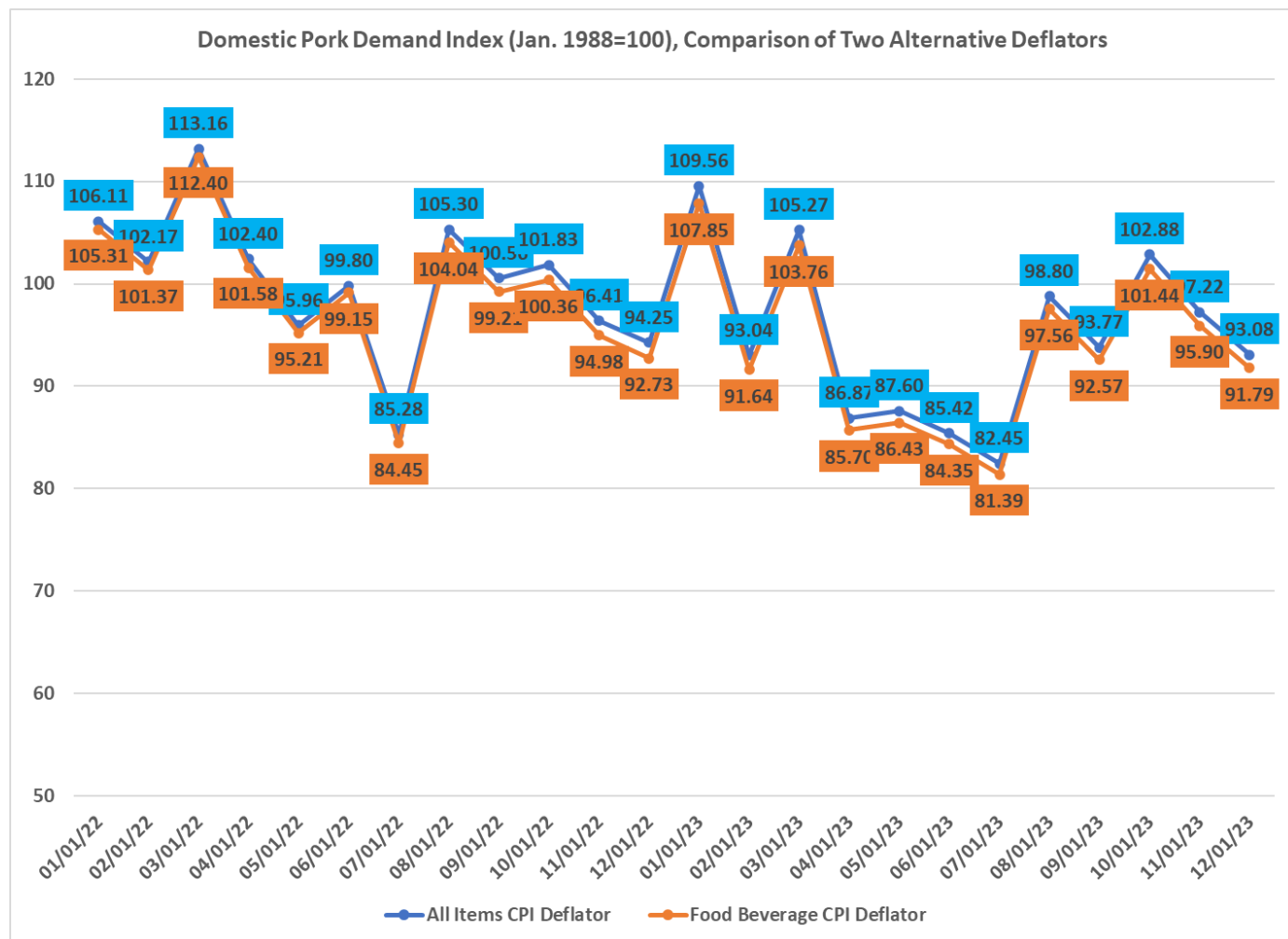
To highlight impact on domestic demand strength conclusions it is useful to first note that use of a deflating index signaling higher (lower) inflation presents a higher (lower) burden of proof for demand growth. That is, given observed consumption volumes it will take a higher nominal meat price to signal demand growth (or less demand decline) if one derives real (inflation-adjusted) meat prices using a deflating index reflecting higher inflation. The next figure illustrates this for the case of domestic pork demand over the 1988-2023 period.



While there are two lines on the above figure they appear to nearly perfectly overlap. This is not surprising as the sole difference is how nominal prices are deflated by use of alternative consumer price indices. To better appreciate the more recent impact of deflator selection, the final figure shows domestic pork demand indices solely for the January 2022 – December 2023 period.

Notice for the past two years demand indices using the Food & Beverage deflator are persistently lower than demand indices built using the broader, All-Items deflator. The key point here is what is impacted: it is the *magnitude rather than direction* of demand change where these indices differ. This magnitude effect has been greatest in recent years consistent with the recent U.S. experience of elevated inflation and varied inflation outcomes across sectors (food vs non-food here) of the broader U.S. economy.

Consider December 2023 where the All-Items CPI based index value was 93.08 and the Food & Beverage CPI based index value was 91.79. While both indices indicate domestic pork demand was weaker in December 2023 than the base period of January 1988 they differ in magnitude of decline – the All-Items CPI based index suggests a 6.92% decline in demand (100-93.08) while the Food & Beverage CPI based index suggests at 8.21% decline (100-91.79).



Summary

This short fact sheet has clarified the role of price deflator selection in domestic meat demand indices. While historically this deflator selection has had little to no consequential impact on conclusions regarding domestic demand strength, the recent period of elevated U.S. inflation and higher inflation in food & beverage categories has increased relevance of deflator selection. Going forward KSU-based meat demand indices will use the All-Items CPI deflator in an attempt to reflect broader purchasing power of U.S. residents.

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