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K**S****THE CHANGING STRUCTURE OF RED MEAT DEMAND****U**James Mintert¹

Summary

Testing for a demand change was done using pork and beef demand models estimated over the 1950-1984 period. Results suggest that a structural change has taken place in both beef and pork demand. The beef demand change, however, appears to have been more severe than that noted for pork.

Introduction

Beef consumption per capita increased steadily during most of the post-World War II era, increasing 88 percent from 1950 to 1976. By 1986, however, per capita beef consumption had declined roughly 15 percent from its 1976 peak. Pork consumption increased since the mid-1970's, but at 59 pounds per capita in 1986, changed little from per capita consumption in the early 1950's. Meanwhile, broiler consumption skyrocketed. Per capita retail broiler consumption in 1986 was 57 lb, up 34 percent since 1976 when beef consumption was at its peak, and nearly triple its 1950 level of 20 lb per capita. What has caused this marked change in Americans' meat consumption?

There are several plausible explanations. Changing relative prices, with broilers becoming cheaper relative to beef and pork, would induce consumers to consume larger quantities of chicken at the expense of beef and pork. Alternatively, a structural demand change could have occurred, implying that a single beef or pork demand relation is incapable of explaining the variation in prices and consumption over the 1950-1984 period. Finally, a combination of the two previously described events could also explain the changing consumption and price relationships.

Procedures

This study examined the hypothesis that a structural change occurred in beef and/or pork demand during the 1950-1984 period. Single equation, price-dependent, demand models were estimated for both beef and pork. Commodity price was estimated as a function of the per capita retail quantities of beef, pork, and broilers, as well as per capita income. The most likely time frame for a structural shift to have occurred was identified using a switching regression model. Chow tests were conducted to test whether the separate regression equations estimated actually identified a structural change.

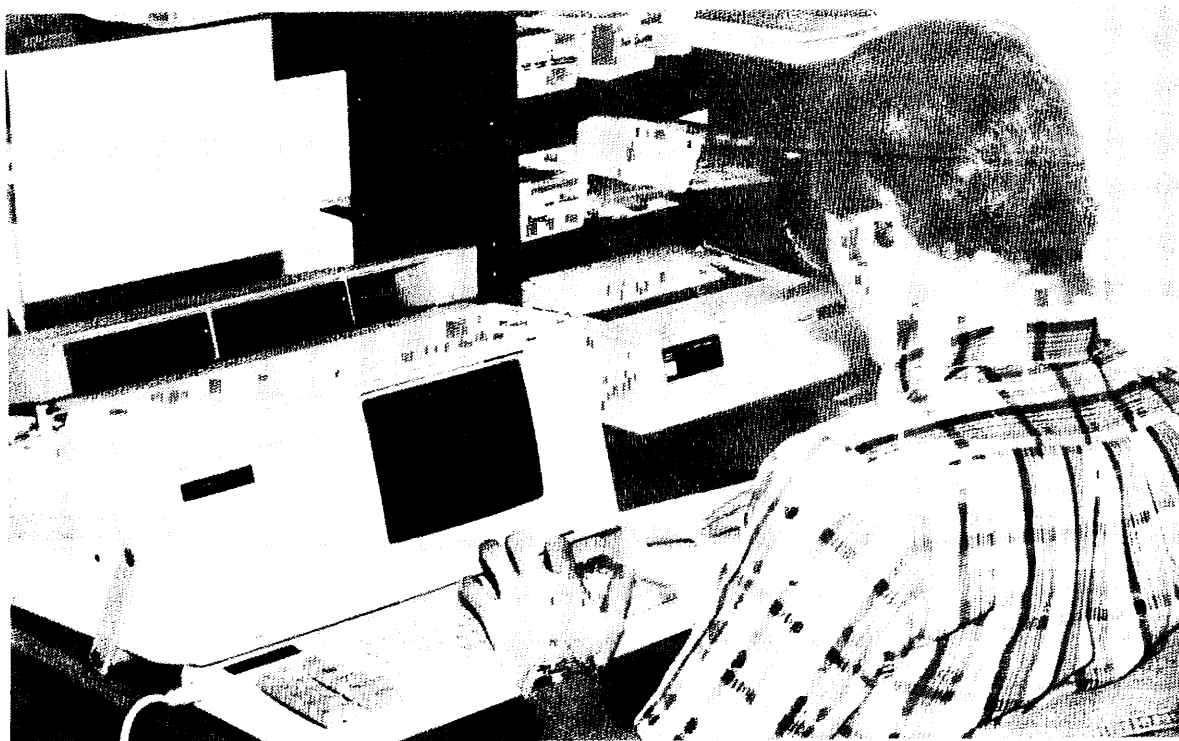
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Results and Discussion

Results indicated that both beef and pork demand experienced a structural demand change during the 1950-1984 period. The exact timing of the demand shifts varied by commodity and by the exact methodology used when estimating the demand models. It appears that pork demand shifted in the mid to late 1960's, whereas the beef demand shift occurred somewhat later, approximately in the late 1960's through the mid-1970's.

Beef's demand shift seems to have been somewhat stronger than that experienced by pork. The post-structural change, beef demand model indicated that beef price responsiveness to changes in quantities of beef, pork, and broilers marketed was increasing. Consumers' disposable income also remained an important determinant of beef prices. Unlike beef, the post-structural change, pork demand model did not exhibit a sharp change from the pre-structural change, pork model. The shift in pork demand apparently was restricted to declining pork price responsiveness to changes in quantities of beef marketed. This implies that beef's importance as a substitute for pork in consumers' diets has decreased.

This study's outcome supports existing research evidence that beef demand has shifted. There is considerably less corroborating evidence that pork demand has experienced a structural demand shift. Finally, the results do not dispute the importance of broilers' price decline relative to both beef and pork prices as an important variable to explain Americans' changing meat consumption patterns. This study does indicate, however, that the changes in the meat complex's price and consumption relations are attributable to more than the changing relative prices of competing meats.



Charlie Rosenkrans, graduate student in physiology, enters data into the computer to be analyzed statistically.