

Tracing the Costs and Benefits of Improvements in Food Safety: The Case of the Hazard Analysis and Critical Control Point Program for Meat and Poultry. By Elise H. Golan, Stephen J. Vogel, Paul D. Frenzen, and Katherine L. Ralston. Food and Rural Economics Division, Economic Research Service, U.S. Department of Agriculture. Agricultural Economic Report No. 791.

Abstract

The level and distribution of the costs and benefits of the Hazard Analysis and Critical Control Point (HACCP) regulatory program for meat and poultry change dramatically once economywide effects are included in the analysis. Using a Social Accounting Matrix Model, we find that reduced premature deaths had a strong positive effect on household income, with economywide benefits almost double initial benefits. Contrary to expectations, reduced medical expenses resulted in a decrease in household income, while HACCP costs resulted in an increase. Net economywide benefits were slightly larger than initial net benefits, with poor households receiving a proportionally smaller share of the increased benefits than nonpoor because of their weak ties to the economy. Our SAM analysis provides policymakers useful information about who ultimately benefits from reduced foodborne illnesses and who ultimately pays the costs of food safety regulation. This analysis also sheds light on a number of issues central to cost-benefit analysis involving health, highlighting the danger of equating changes in income with changes in well-being.

Keywords: Food safety, foodborne illness, HACCP, Social Accounting Matrix.

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Summary

The level and distribution of the costs and benefits of the Hazard Analysis and Critical Control Point (HACCP) regulatory program for meat and poultry changed dramatically once economywide effects were included in the analysis. We constructed a Social Accounting Matrix (SAM) model to extend the sector-specific cost-benefit analysis of the HACCP program to account for the economywide impact of the program on both producers and consumers. This type of analysis provides useful information for policymakers by indicating who ultimately benefits from improved health outcomes and who ultimately pays the costs of food safety regulation.

We used the SAM model to conduct two sets of simulations. One set examined the benefits of reducing foodborne illness and the other examined the cost of implementing HACCP. On the benefit side, the simulations examined the economywide benefits of reduced premature deaths and medical expenses. The SAM multiplier model indicated that every dollar of income saved by preventing premature deaths from foodborne illness resulted in an economywide income gain of \$1.92. This result demonstrates that premature death imposes substantial costs on society as a whole. Fewer premature deaths led to an increase in household income nearly double the size of the initial increase.

For medical expenses, the SAM multiplier model showed that if households paid their medical expenses out of household income or savings, then every dollar saved through reduced foodborne illnesses resulted in an economywide income *loss* of \$0.27. Likewise, if public or private insurance covered the cost of medical expenses, then every dollar saved because of fewer foodborne illnesses resulted in an economywide income *loss* of \$0.32. These results indicate that the consumption of medical goods and services caused by foodborne illness triggers more economic activity than the consumption activities that households would have enjoyed if they had not needed to spend money on medical goods and services. One possible explanation for this result is that, in general, medical goods and services use a higher proportion of domestically produced inputs than do other goods and services. These results highlight the need for caution in interpreting income changes as changes in well-being and underline the need to refine methodology to account for changes in well-being that are not captured by income measures alone.

The final economywide distribution of the benefits of fewer illnesses and premature deaths differed from the initial distribution of benefits. Initially, the benefits of these reductions accrued to those who would have fallen sick or would have died prematurely. However, unlike the initial distribution of benefits, the final distribution did not mirror disease incidence, but depended instead on the relationship of households to the economy. As a result, higher income households, which have strong links to the economy, bore a larger share of the change in economic activity triggered by reduced premature deaths and medical expenses than lower income households, which have weak links to the economy.

Regarding costs, the simulations with the SAM multiplier model indicated that every dollar spent on HACCP implementation resulted in an economywide income loss of \$0.35. This result occurred because, in this simulation, the increased costs of beef and poultry production due to HACCP implementation were passed on to

consumers so that households incurred a decrease in real income equivalent to the costs of HACCP implementation. When we held nominal income constant, economywide income actually rose by \$0.65 for every dollar spent on HACCP. The spread between the real and nominal results serves as yet another reminder of the potential gap between a monetary accounting of economic activity and measures of well-being. The ultimate distribution of the reduction in real household income reflects the economic ties of the household groupings: both households below poverty and elderly households absorb relatively small percentages of the decrease in economywide income triggered by HACCP implementation.

The SAM analysis does not provide precise dollar estimates of the ultimate costs and benefits of HACCP. Instead, it provides information on the market mechanisms through which costs and benefits of the HACCP program affect the economy, thereby indicating the direction and magnitude of the economic flows resulting from regulation and reductions in foodborne illness. The SAM analysis also sheds light on a number of issues central to cost-benefit analysis involving health. It focuses attention on the different ways that health benefits are measured and reveals fundamental differences in the way different types of health benefits impact the economy. The SAM analysis demonstrates the usefulness of the cost-of-illness approach in deciphering economic distortions caused by health shocks to the economy and the danger of equating changes in income with changes in well-being.